The Builder.

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The Application of Ornament.

THIS small book* forms the third of a series of text-books of ornamental design by the same author, the other two of which we have noticed as they appeared. These former books treated of the rudimentary lines on which ornament may be designed and distributed. The present book treats of ornament in relation to practical conditions, in regard to the position it occupies and the material in which it is worked.

We have now arrived so far at a consensus of feeling and critical opinion in regard to the principles and functions of decorative art, that every one who has paid any attention to the subject knows pretty well what line will be taken by any competent artist and critic in regard to main principles. Thus the advice and opinions embodied in Mr. Day's short treatise are only what we are prepared to hear, and what we have heard from various other writers already. This detracts, no doubt, from the novel interest which a book like Mr. Day's may yet have for those who are still in the Court of the Gentiles; but it is not otherwise a matter for regret, but rather for satisfaction, as indicating that we are at last arriving at something like a common ground, and of generally-admitted faith and practice in regard to decoratve art. And every man has his own way of putting and of illustrating things, and his own minor points to enforce.

Mr. Day, for instance, commences by some remarks which form a kind of note of interrogation placed against that now much-worn word "conventional," pointing out that it does not literally mean what it is now almost universally taken to mean, and that in France it is used in a quite different and even contemptuous sense, as implying a kind of scholastic mannerism. We quite agree with the author that "conventional" is not, etymologically speaking, the correct word to use for the process of or condition of design to which we apply it; but we do not know that there is any other word in the language which expresses the meaning any more precisely. Mr. Day suggests "apt," which strikes us as very bald and incomplete. A better word is the French "choisi," which, of course, has a shade of meaning quite distinct from that of "chosen" in English,—though we have seen the latter expression used, half-playfully, by an English writer on art. But, in fact, the idea implied in "conventional" is a modern one; the thing, of course, was *done*, ages ago, but the theory on the subject is modern, and we had to find a word for it. "Conventional" stood ready, a fine-sounding word, with just sufficient etymological suitability about it to justify its application, and we have seized on it, and poured new meaning into it. We cannot get rid of it now; nor can we agree with the author that there is any confusion as to its signification. He says, "What a flood of light would be let in upon the question of decorative design, could we but agree amongst ourselves as to what is meant by the term 'conventional.'" We do not agree at all in this. We believe that "conventional" conveys, to the minds of all who have studied or thought about art at all, a perfectly clear and distinct mental idea: only different persons who might try to define the idea in other terms would probably vary their terms a good deal, because the idea is one difficult to express in words at all. The word "conventional" is, in fact, a kind of shorthand sign for a somewhat complicated mental perception, about the nature of which there is, we believe, no doubt or difference among those who have it: the difficulty is to convey it to those who have not.

The special quality about Mr. Day's text-books is not that they tell us anything which has not been told before, but that they are so well and aptly illustrated, and illustration is the soul of a book on this kind of subject. Plate 2, with the naturalistic human figures in a sixteenth-century German wall-paper repeated symmetrically opposite to each other, says more than pages of discourse would convey as to the radical unsuitability of thus turning the realistic nude figure into a repeating ornament. The following considerations, however, will bear quotation:—

> "Presumably the reason for introducing figures into ornamental design is for the sake of some added interest there may be in them. But you cannot get up any absorbing interest in a series of figures all identically of one pattern. They suggest only the mechanism employed in producing them. The multiplication of the figures, far from multiplying its interest, diminishes it in proportion to the number of times it is repeated; and, though it be a very good thing that is repeated, the case is not greatly mended,—it is so easy to have too much of a good thing.
>
> The only safety is in toning down the repeated form until its recurrence ceases to be very obvious. This may be effected in various ways. In certain embossed leather and such-like designs, it is brought about partly by the low relief of the stamping, partly by the softness of the colouring, and partly by a more or less cunning complication of the figures with the rest of the design, so that they do not throw themselves into notice. That variety in the creatures, were it possible, would be desirable, no one can doubt."

In pursuance of this idea the author gives us an example of a German pattern of rich though not well-designed scroll-work, in which animal figures are introduced, symmetrically placed as to position, but varied in detail and in action. If, however, this is meant as one section of a repeating pattern, we question whether anything is gained by this partial variation, which can only be carried out within the limits of the "repeat." If a pattern is to be repeated, we should say that it is better to treat it as a purely artificial thing in every detail. The sight of two animal forms in varied attitude and action is all very well as long as we only look at one repeat; but when we find the same semblance of naturalistic action repeated at regular intervals all over the surface decorated, we only feel as if the designer had made a futile effort, in this way, to cheat us into a momentary belief that this was a hand-drawn design with no repetition.

As to the chapter on "Where to stop in ornament," it is hardly possible to lay down any general theory on such a subject. The too-much or too-little is so completely a matter of the circumstances and nature of the particular case that one would have to call for a fresh decision in each instance. Mr. Day comes, perhaps, as near as is possible to a general theory in saying that the work itself,—its nature and what the material would lend itself to,—points out where to stop. This is true enough, but it requires a considerable insight to know when this limitation is reached. No words will teach it; they may possibly, however, suggest to the craftsman the direction in which to keep guard against over-elaboration of ornament. So long as the ornament itself is good, both in idea and in design, and nothing is introduced contrary to the nature of the material, or to the practical purpose of the object ornamented, we doubt whether ornament can be carried too far. In most cases where we have that impression, it will be found either that the ornament itself

* "The Application of Ornament." By Lewis F. Day. Illustrated. London: B. T. Batsford. 1888.

is commonplace in design, or that it interferes with some practical requirement.

In the chapter on "Style and Handicraft" it seems to be pretty nearly assumed that these are practically the same thing; that it is the special conditions of each handicraft that insensibly produce or form their own style. Of course there is a great deal of truth in this, and it is well illustrated by examples of work in different materials, showing the influence of the material on the manner of work; but it will not do to confound "style" in its wider sense with the manner or character given by the influence of the tool and the material; there is something more than that implied in that subtle and untranslatable expression "style." The characteristics of work, as varied in accordance with material, are, however, admirably illustrated by illustrations of three works, an Egyptian granite statue, a Greek marble bas-relief, and a sandstone statue. The same thing is supposed to be shown in the examples of Arabic plaster-work, given on plate 21; but here the illustration rather fails: the style of work shown there, with its incised lines and flat cut-out forms, is by no means essentially and specially adapted to plaster: one may be apt to think so from seeing so much plaster ornament of this kind in Arabic work, and associating the style with that material, but in reality it would be just as applicable to some other very different substances. The author makes a really picturesque criticism when he says the "somewhat savage enrichment of our own Norman buildings forcibly recalls the rude way in which it was done. It is, more properly speaking, chopped than carved," which is exactly the case. This seems to be the influence, not so much of the material as of the rudeness of the tools—perhaps also the rudeness of the men who handled them.

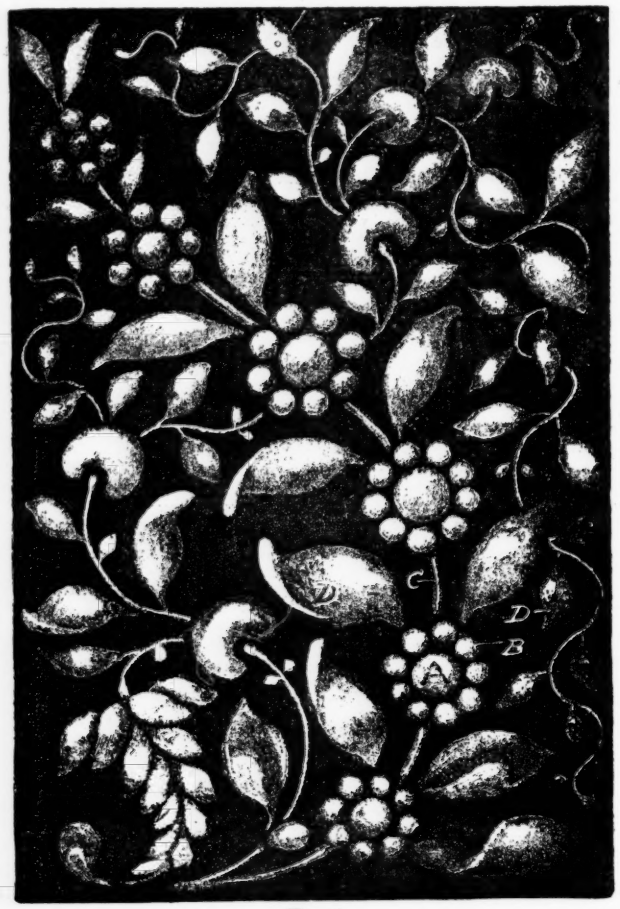


Fig. 1.

The chapter on "the teaching of the tool" carries the same idea further into detail. An illustration of foliage executed in répoussé work (fig. 1*) forms a very good example of the manner in which work of this kind almost inevitably proceeds, commencing by indenting the leading forms, and then connecting the indentations. "In beaten work you descend from the mass to the minutiæ; in filagree, on the contrary, you ascend from the minutiæ to the mass." The illustration appended (fig. 2) shows how nearly similar is the result of the same method of working, in things produced in different countries at an interval of five centuries or so. The characterlessness of seventeenth century work is due, Mr. Day thinks, in great measure to the absence of any direct impress of the tool on the design; "in the process of modern manufacture, everything is planed down to a marvellous and wondrous smoothness; the mark of the tool, which is the evidence of workmanlikeness, is popularly regarded even as bad work—want of finish, indeed." There are two sides to this, however. Some of those who protest against smoothed-out and over-finished work, rightly so far, seem rather in danger of going to the other extreme, and considering roughness of finish as a condition or indication of excellence; just as some painters delight in leaving prominent brush-marks on their canvas. That is not what we want pictures for, after all; nor do we want carving merely as an illustration of methods of tooling, which, after all, is the means, not the end.

A concluding chapter on "some superstitions" is a protest against the too ready acceptance of certain things as necessary articles of faith with the decorative designer; for instance, the necessity of strongly-marked outline. There are not many kinds of decorative design, however, in which a strongly-marked and firm outline is not desirable; but the author gives a good example as against

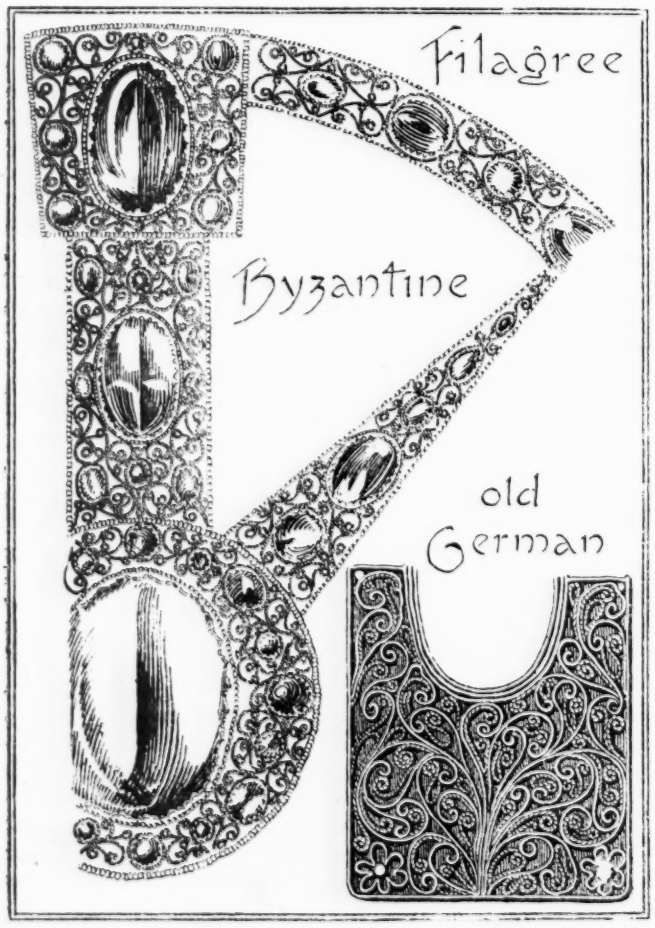


Fig. 2.

Fig. 3.

* Mr. Batsford has kindly authorised us to reproduce two or three of the cuts, to aid in illustrating these remarks.

the universality of this faith in comparing champlevé work with cloisonné. In the latter, the soldered-on metal boundary gives a necessary outline, which is kept at a uniform thickness, not merely as a matter of taste, but as a matter of convenience of execution; whereas in the "digging out" process of champlevé there is no such reason for a regularly-treated outline, and it is often more convenient for the artist to forego the attempt to leave regularly-formed barriers between the enamel; and the characteristic distinction between champlevé and cloisonné should be, in fact, that the latter shows regularly-formed outlines, and the former does not. The emblem at the foot of the adjoining plate (fig. 3) shows both processes in one piece of work, the animal being champlevé, and the conventional foliage-ornament cloisonné; and in the pieces of border at the left hand and top of the plate the characteristics of champlevé are well shown; the enamel being obviously let into the metal ground, leaving the latter in irregular spaces between, and no regular outline confining the enamel pattern. The author points out also that in other forms of work, as in stained glass, thick outline may be a necessity of the construction; but "there is no law making outline compulsory"; and Mr. Day gives one illustration of appliqué work, with the design outlined by braiding sewn over the joining of the materials, in which the effect of the over-pronounced outline is to our eyes very bad indeed, though we do not gather that the illustration is given as a warning.

The summary of the teaching of the book is perhaps in the last sentence: "What is called convention is not a hindrance to the workman, but a help. If he finds it an impediment, he would do well to ask himself if that may not be his fault."

REMARKS ON THE MILAN FAÇADE COMPETITION.*

By Professor Melani.

THE International Competition for the Façade of the Milan Cathedral may be considered one of the most interesting artistic events of the century, and one of the most powerful proofs of the historical tendency of architectural study. Inspired with the object of establishing a style for the Cathedral in its façade, the competition, both in its scheme and in its development. has not met with unanimous and strong approval; in fact, it has been quite the reverse. That which happened at Florence concerning the façade of the Cathedral was not the case at Milan. In the Milanese Cathedral the façade already exists, and various portions of it possess indisputable merit; in the Florentine Cathedral the façade was entirely wanting, and the rough wall contrasting with the gorgeousness of marble polychromy in the other portions of the building was a great and intolerable eye-sore.

The present façade of the Cathedral of Milan is in two styles: the late Gothic style of Carlo Buzzi, an architect of the seventeenth century, and the fantastic style of Pellegrino Pelligrini (1532 ?-1596).

Having mentioned the name of Carlo Buzzi, you will allow me to direct your attention to the fact that this architect has had a large amount of influence on the present façade of the Cathedral, and on the one which is to be made in future, though this influence has been diminished by recent studies made of the work of Francesco Maria Richino (1583-1658), who was the author of a project for the façade of the Cathedral which was unknown until very recently.

The façade of our Cathedral has, however, been the subject of innumerable projects made in the last two centuries, as a drawing of the façade contemporary with the foundation of the church has never existed; in fact, the first who occupied himself seriously about this matter was the Archbishop Carlo Borromeo, and this was not before 1571. Pellegrino Pellegrini appears on the scene at the same time as Carlo Borromeo, he having been invited to make two drawings for the façade, which he did, following in both cases the so-called "Baroque" style of his times. The two projects, which were forgotten for about twenty years, were not taken seriously into consideration until after the death of their author, and then not by him who had commissioned them.

The selection took place in 1609, by direction of the successor and cousin of Carlo Borromeo, the Cardinal Federigo Borromeo, and it was a selection subservient to the condition that important modifications should be made in the selected project. The works were commenced immediately; but, for various reasons, the principal of which was the difficulty in obtaining certain columns about twenty mètres in height, it was only partly carried out.

The fact is, however, that the present façade of the Cathedral bears visible and praiseworthy impressions of Pellegrini's work, and that the studies for the façade of the Milanese Cathedral enter into an entirely new phase of study totally contrary to the previous one. After the Pellegrini project, Carlo Buzzi, following and enlarging on the ideas of Richino, was the architect who, when put to the practical test of constructing, disdained all the projects made on "Baroque" lines, and devoted his attention to Gothic architecture for the façade, as it had already been proposed by Francesco di Giorgio Martini, a man of considerable genius.* This was in 1600, when the redundant and pompous style of art called, with great injustice, "Baroque" was in its prime. This eminent architect proposed three alternative designs, made between 1645 and 1653; the present façade may be said to be, in the main, his design of 1653, but miserably spoiled and debased by the modifications of the architects of the beginning of this century.

If there are two styles which are diametrically opposed both in plan and decorative system, they are the Gothic and the Rococo, but Buzzi had accomplished the difficult task of harmonising the Gothic design of the sides of the Cathedral with the Renaissance doors and windows.

But, as I have said, in the two projects, that of Pellegrini and that of Buzzi, the architects who from time to time undertook the direction of the works endeavoured each of them to fix on it their own individual imprint, and, therefore, while giving also to Francesco Maria Richino the place which he deserves in the arrangement of the present façade, I will sum up as follows:—The four minor doors and the windows above them are Pellegrini's work; the main door is in the upper part the work of Richino, as also the buttresses (he agreeing in this point with Buzzi); and the upper portion is Buzzi's. This is the present façade of the Cathedral of Milan, which, in spite of being in two styles and notwithstanding the mixture of various modes of construction, is in my opinion entitled to no little consideration. It represents a historical period; and portions of it, the doors for instance, are extremely beautiful; to destroy it might be considered an offence to the majesty of history, and this is why, before discussing the future façade, I have desired to point to the present façade, and to show under what circumstances it was erected.

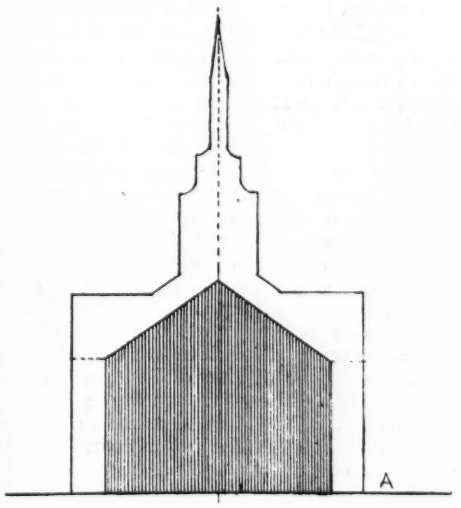
But as in this world we cannot all have the same opinion, thus the feeling which I have here expressed, and which is supported by few, has met with opposition from those who desire uniformity of style in architectural monuments, and they have up to now triumphed. In September, 1884, a citizen of Milan, Aristide de Togni, died, leaving to the administration of the Cathedral the whole of his fortune, about one million Italian lire, for the specific purpose of reconstructing the façade; and with the proviso that the bequest should be devoted to its purpose within a specified time, viz., twenty years.

In the presence of this sacred obligation the administration of the Cathedral, which also cherished the idea of a new façade, found itself in the auspicious position of being able to establish a competition; and considering that foreign artists besides Italian ones took a large part in the works of our monument, it decided that the competition should be an international one. Besides this general clause, the administration of the Cathedral fixed another highly-important one, that is to say, that no estimated limit should be fixed for the expense. The administration of the Cathedral was induced to take this step, which was approved of by all, with the aim of removing all possible obstacles to the freedom of invention of the competitors, and, moreover, in doing this the constant rule in the history of the building was followed; in fact, since the great structure was begun, and this is exactly five centuries ago, there is no sign of any economical considerations having ever been entertained.

The programme of the competition having been drawn up, it was decided, as you already know, to establish two different degrees of test, leaving the greatest liberty to the competitors' imaginations, on one sole condition: to use the same marble as used in the construction of the Cathedral, and to comply with the plan and "special style" of the monument.

The international character of the competition having thus been decided upon, it was a logical consequence that there should be an international jury, and this was the case. The foreign representatives in the jury were the following:—A German architect (Federico Schmidt), a French architect (Fernand de Dartein),—he having been preferred in consideration of a work of his upon *Lombard Architecture*, greatly different in an artistic sense from that of your compatriot Gruner ("The Terra-cotta Architecture of North Italy"),—and an English architect (Alfred Waterhouse).

It was also decided that after, a public exhibition, the international jury should choose at least ten, and not more than fifteen, of the competitors for the second test, to be carried out according to a definitive programme. The first competition took place; its success in regard to numbers being astounding. The public at Milan was persuaded that the highly-important problem would call the attention of a great number of Italian and foreign artists, but nobody could have expected more than one hundred and twenty competitors, and nearly four hundred designs; and not only the great number, but the merits of a great part of the works, raised the present competition to the position of one of the most noble and keenly-contested struggles which have ever been opened to architectural art among civilised nations.



The competitors rose from every side,—German, English, French, and Russian,—and it was wonderful to note the astounding variety of conception which struggled against the difficulties presented by the present façade of the Cathedral; difficulties which have perplexed the boldest and most powerful minds. But amongst the different conceptions it was

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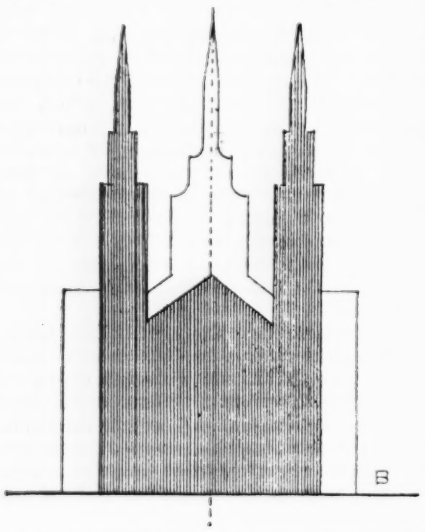
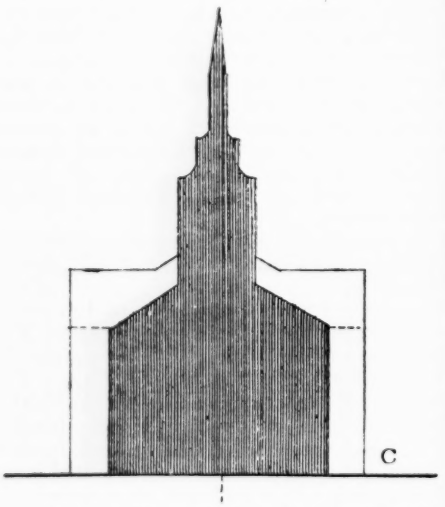
* Translated from our correspondent's Italian. It will, perhaps, be of interest to English readers to have a criticism on the competition from the point of view of a Milanese architect.

* V. Springer, "Bilder aus der Neueren Kunstgeschichte." 1867. P. 152.

possible to classify two main ideas, and to divide the designs into those developed according to the actual plan of the church (fig. A), and those having a compound basis, —that is to say, developed upon the turret lines of the transalpine cathedrals of France; for example, Rheims, Amiens, Notre Dame of Paris, Orleans, Bayeaux, Rouen, Poitiers (fig. B). Another idea was developed, but in



a very timid fashion,—an idea that I might call a conciliatory one,—with the tower in the middle of the façade (fig. C). It is



scarcely necessary to add that the projects having for basis towers were mainly sent by foreign artists. Each of these types was represented in an effective manner at the competition.

The English competitors, as far as it is known,* were two,—Mr. Brade, of Kendal, and Messrs. Pugin, of London (whose drawing unfortunately reached Milan too late to be legally accepted). Both proposed a façade with towers; both projects being very praiseworthy, but greatly open to criticism as to the interpretation of the style. And if I am allowed to express my opinion concerning the vital question of towers or no towers, I should frankly say that I strongly support the idea of a simple façade—that is to say, without towers. In our cathedral the towers at the two extreme ends of the façade are contrasting elements, which, as far as concerns the ground plan, inevitably spoil the simple and severe unity of the internal disposition, the principal merit of our Cathedral.

From the point of view of construction our temple is of a different nature from all transalpine Cathedrals. The dominant point in the Cathedral of Milan is the central spire, which is one of the main features of our traditional style. It was imagined and started at the very beginning of the construction, and by its size attracts the eye and impresses the mind. It is not the slender flêche of French Cathedrals, which naturally admits of the erection of towers in the façade, and its artistic and ideal effectiveness would be destroyed if two steeples in the façade should imposingly spring up to more or less its height. The steeples in the façade would, moreover, have a bad effect, as the three spires would, so to speak, neutralise one another, leaving the eye uncertain which point to regard as the climax of the design. (See fig. B). In one word, in the centre spire is the key of the plan of our building. By removing its supremacy its decorative and structural functions are ignored, and this consideration is, in my opinion, vital.

The International Jury considered it advisable to state in its report that it could have chosen many more than fifteen projects in this first competition had it been permissible to increase in the second and decisive contest the small number of the elect. The selection was made as follows:—Among the fifteen eight were Italian, six of them being Milanese; two were German, two Austrian, one French, one English, and one Russian; nor is it to be wondered at that among the eight Italians six were Milanese, as the local competitors were extremely numerous, while the competitors from other parts of Italy replied in but a feeble manner, both concerning number and importance of projects, to the invitation of the administration of the Cathedral.

Were I asked how the proposals of the jury were received by the artists and by the intelligent portion of the public, I might occupy a very disproportionate amount of your space in replying; therefore, on this point, I will limit myself to stating that the first selection made by the jury did not bring any light to bear on the studies for the façade of the Cathedral. This selection being based on a very comprehensive system, offered us façades with or without steeples, with parallel slopes, or with converging slopes with horizontal ends, or five gablets with a large window over the main door, or with a round window with three doors instead of five, &c. The jury seem, in fact, to have considered it advisable to select examples of each method of treatment proposed; on the merits of which decision it is not worth while to say anything now.

I will, therefore, proceed to the final competition. At the time fixed, September 15, the competitors presented their respective drawings. Ciaghin, of St. Petersburg, being dead, the competitors were only fourteen instead of fifteen. Therefore, there were fourteen projects—or rather sixteen projects —as two of the competitors, Signor Cesa-Bianchi, of Milan, and MM. Hartel and Neckelmann, of Leipsig, submitted a double solution of the problem, that is to say, the façade with terminal towers, and the simple façade without towers.

Mr. Brade, who had on the first occasion also submitted a project which in itself was highly praiseworthy, but which, considered in relation to the style and plan of the Cathedral, was totally out of harmony, being still persevering in the solution he had proposed, persisted in maintaining it in its former condition, to his detriment, as the jury was obliged, for the sake of justice, to exclude his project from any discussion, as it did not comply with the requirements of the programme; that is to say, it was not in harmony with the plan and style of Milan Cathedral. And I regret this, as Mr. Brade, whom I do not know either personally or by his works, has given proof in his project that he is a talented architect. But the fact is that the monument in question, having to be erected according to an original style, and it being a question of completing an ancient work, an international competition, though a noble and generous scheme in theory, is, in practice, in such a case, absurd. The style of a building is not the mechanical work of artificers, but the result of the co-ordination of many influences, arising from feeling, climate, and education, which vary according to the race of the people and according to the geographical position of a country.

Roman art, which was Roman because it could not be Greek, and notwithstanding the strong and constant influence of Greece on Rome, has characteristics of its own which arise from the temperament of its people and its climatic conditions. For the same reason, the Gothic of an English abbey or cathedral is not, and cannot be, the Gothic of the Cathedral of Milan, of Santa Croce, or of Santa Maria del Fiore.

In this competition, therefore, the native architects conquered the foreign ones through their faithfulness to the original style of the cathedral; and this is an essential condition, as the monument in question exists already in the greater part, and is to be completed according to its own style. Among the foreigners, the project of M. Deperthes, of Paris, with very high towers, attracted the most attention, by its ambitious and imaginative character. But it was precisely this that prevented its success. It was too imaginative, and had too little reference to the actual conditions of the problem; and it had also the defect of being too obviously the design of a French artist born and educated under a French sky.

The turriform pattern is, in my mind, not suitable to the plan and style of our Cathedral, but it found an intelligent advocate in Sig. Cesa-Bianchi, of Milan, of whose project I send you a drawing, together with that without towers by Sig. Brentano, which was the one chosen for execution. The Bianchi project is evidently the result of very careful consideration. The fact that its author endeavoured to Italianise a foreign element, in accordance with the requirements of the plan of the building, is a merit which must be taken into account in regard to it. The towers, perhaps, are deficient in height, considered in themselves, but it is evident that the author did not carry them to a great height for fear of injuring the predominance of the central feature. And the idea, in this plan, to isolate the three doors from the upper portion of the façade, joining them in the plan with the line of the towers, is good and picturesque.

Among the foreign designs, and especially those without towers, is to be specially noticed the project of Sig. Nordio, of Trieste, a design which has closely competed for success with that of Sig. Brentano.

The idea which has won the day, then, has been the simple one, the idea which followed the existing plan, and which was formulated on the basis of not altering in the slightest degree the structure, and leaving the central spire or lantern as the predominating feature.

The design of Signor Giuseppe Brentano, a very young Milanese architect, from the very first days of the Exhibition drew the attention of the connoisseurs as the one which, by its picturesque treatment and individuality, attracted the greatest attention. The piers are made to correspond with the internal piers; the lower portion is divided by long windows similar to those which exist at the sides of the cathedral, and in the central nave is a large window similar to those in the apses, which are among the most striking features of our monument.

How is it there are three doors instead of five, since there are five aisles? This is a question certainly open to discussion. The documents which refer to the first years of the construction of the cathedral do not contain any allusion to the number of doors in the principal façade. There is, however, in the deliberations concerning the beginning of the construction, an allusion to the idea of transforming the minor aisles into a series of chapels, as in San Petronio at Bologna, a church which was begun a few years after our cathedral, with the intention of emulating, or, rather, surpassing, the majesty of the Milanese church. But at Milan the old idea was in no way followed up. Therefore, as the plan of the cathedral, without chapels in the further aisles as it is now, is perfectly consistent, the idea of the three doors, followed also by another talented competitor, Signor Beltrami, has no logical reason in its favour.

You must not, however, suppose that the Brentano façade is to be carried out exactly as its author proposed; it will have to be modified in some parts, by the special desire of the jury, which, however, was nearly unanimous in selecting it from the sixteen

* The greater part of the plans were distinguised by a motto, with the exception of a few which were signed, perfect freedom being allowed on this point.

projects submitted. Signor Brentano will, for instance, have to forego his idea of having sliding doors to his façade, and this because the idea is thoroughly modern, and because in a temple like ours bronze doors will have to be placed, for which, in fact, the Melleiro bequest of 100,000 lire is in store. In the meantime, before the demolishing hammer commences to attack the present façade, Signor Brentano will have to have a model of his design constructed under his supervision, and at the expense of the administration of the cathedral, on a scale of one-twentieth the size of the executed design, according to the model of the cathedral possessed by the administration. After the construction of the model, he will be entitled to the second half of the reward of 40,000 lire, which was fixed for the winner of the present competition. In speaking of Signor Brentano personally, I should say that he is at the very outset of his career, is twenty-six years old, and only two years have elapsed since he completed his studies, and that this is the first competition in which he has taken part. Undoubtedly, he begins his artistic career where many would be more than glad to end their own.

I must add that not everybody here believes that the new façade will be really constructed, and I know not what to tell you in this matter. It is certain that attacking the present façade with the idea of demolishing it from top to bottom is an irreverent and dangerous undertaking. But if so, why was the present competition for the new façade of the Cathedral of Milan promulgated? For myself, I find it convenient to close this lucubration of mine with the very opportune motto which distinguished the project of your compatriot, Mr. Brade,—"Chi vivrà vedrà."

ALFREDO MELANI.

Milan, November, 1888.

NOTES.

THE financial crisis of the Panama Canal scheme must have been foreseen for some time past by all who had eyes to see. The refusal of the French Government to pass the proposed measure for permitting the company to ignore their responsibilities to their creditors for a specified time,—giving them, in fact, a legal permission to stop payment without the usual consequences of stopping payment,—may probably be attributed to political rather than moral motives. The French people would probably condone any eccentricity of special legislation in support of a scheme to the completion of which the honour of the country seems now pledged. But there is no doubt that any definite interference by the French Government in favour of the scheme would cause the American Government to regard it in a very different light from that in which they view it as long as it is in the nature of a private enterprise. That this is so has been significantly shown by a resolution proposed to be brought before the American Senate by Senator Edmunds, as reported in the *Times* of Thursday. That the canal can be completed if the French are disposed to go on spending money *ad libitum* upon it we have little doubt; the confidence of the contractor for the locks, M. Eiffel, who is, presumably at all events, a practical man, speaks strongly in this direction. How far this pouring out of money will have to go, however, is what no one can well prophesy; nor can it be ascertained, except by experience, how far the French people will continue to be enticed by M. de Lesseps's sanguine and contagious enthusiasm, and how far they will forgive M. de Lesseps for the light-hearted manner in which he has lured them along with golden promises, the solid grounds for which he seems never even to have explored himself. According to that wonderful person, the Paris correspondent of the *Times*, however, it seems that this neglect to ascertain the actual facts is to be regarded as M. de Lesseps's best excuse. In the Paris letter of the *Times* of Monday we read, "It is but fair to M. de Lesseps to state that when he launched the scheme he had never seen the isthmus"! So that, according to this sapient gentleman, it is to be maintained to the credit of M. de Lesseps that when he launched a vast engineering scheme, which was to engulf millions of money entrusted to his company by private shareholders, he had never examined the site on which the work was to be done! It will be difficult for even M. de Blowitz to beat that.

IT may be remembered that, by an order of the Chief of Police of Berlin, issued on April 4, 1884, the use of cast-iron columns not protected against the action of fire under supporting walls of buildings in Berlin was forbidden, only wrought-iron columns, or piers constructed of Dutch brick, being permitted. The Association of German Ironfounders have taken steps to have the order cancelled, as injurious to the interests of the trade, and, with that view, have collected evidence to demonstrate that the order was unnecessary. At the recent general meeting of the Association, Herr Jüngst, of Gleiwitz, reported on the progress made. He pointed out that, according to experiments made by Professor Bauschinger, both cast and wrought-iron supports lose in solidity, and are bent, when exposed to the action of fire, but that cast-iron columns are able to support the weights superimposed on them in a fire, whilst wrought-iron columns do not always possess that property. After hearing the report, the meeting unanimously resolved to ask the Chief of Police to annul the order, but to leave it to him to issue special instructions as to the conditions under which such supports should be employed, care being taken, however, that cast-iron columns are sound in the core, and not cast eccentrically. It is to be hoped that the official authority will not listen to an appeal, obviously prompted by trade interests, against a regulation which is a most desirable one for the safety of public buildings.

THE immense advantages which, in addition to the saving in cost, result from the application of gaseous fuel to metallurgical operations are well known. Mr. B. H. Thwaite, C.E., who has been much identified with this branch of industry, has recently described in detail a bold scheme by which he conceives it possible to supply the towns of England with gas brought in pipes from the coal-fields of South Wales, Staffordshire, and South Yorkshire. The coal would be converted into gas at those localities, delivered into mains at great pressure, and thence conveyed to London, distribution being made to the large towns on the way. The gas would be available for heating purposes by day, and for illumination, by means of special burners, at night. Mr. Thwaite points out the great saving in fuel that would result,—the fact that there would be no expense for railway transit, or haulage, no middlemen, and no smoke. That the scheme is not impracticable is proved by the fact that natural gas is conveyed to a distance of 60 miles from the wells in Pennsylvania to distributing locations, and that within the last few years the mileage of the distributing pipes has increased to 2,300 miles. Mr. Thwaite even thinks that natural gas might be found some 1,500 ft. below the salt-beds of Cheshire, and probably underneath the coal-fields also, if we were enterprising enough to make the necessary borings.

DR. BRUCE LOW has made a report to the Local Government Board on an outbreak of diphtheria in the Ashbourne Urban Sanitary District. The town is divided by the river Henmore into two parts, Ashbourne and Compton. In the neighbourhood of the market-place on the Ashbourne side—

"Dwellings are crowded together in back-yards or courts, entered by narrow passages. Compton, on the other hand, is low-lying on gravel and alluvium, and in rainy seasons is liable to be flooded by the stream. It is connected with Ashbourne by a bridge, and its main street runs almost due south. A large proportion of the population here inhabit crowded back-yards or courts behind the main street. The dwellings in these courts are commonly old, damp, and in many cases overcrowded. As a rule, they have only doors and windows on one side, and, as in the houses behind the market-place, there is an absence of free movement of fresh air in and around them. The yards are mostly unpaved and irregular, so that the surface is often fouled by stagnant sewage." . . . .

The water supply is entirely from wells; and this is the condition of things, a condition occurring over and over again in these disease reports:—

"Most private houses have wells of their own. Those houses which have none get their supply from one or other of the three public pumps, or beg from their more fortunate neighbours. The shallower private wells, and especially those in Compton, are very liable to pollution. In one instance observed, the urinal attached to a public-house was within two yards of the pump; the urine could be seen on the surface, soaking through the unpaved and unprotected yard above the shallow well. In other cases, pig-styes, dung-heaps, and other collections of animal matter were seen in close proximity to the wells. The nature of the subsoil is favourable to soakage."

We come again also on the old plague of waterclosets with no proper mechanical flushing apparatus, with its usual consequences:—

"Many of the poorer houses have in the back yards watercloset, which have to be hand-flushed. In several cases these were found in a filthy state, crammed with excrement, and completely stopped. The scarcity of water, and the necessity of carrying it from the well or public pump to the closet, are not favourable towards keeping such closets clean."

The Medical Officer of Health receives 10*l.* per annum. His recommendations are not acted upon by the local authorities, and, adds Dr. Low, "the sum allotted to him as Medical Officer of Health may fairly be regarded as measuring the amount of service expected from him."

MR. J. H. SARGENT has communicated to the American Journal of the Association of Engineering Societies his experience of wood and brick pavement in the United States. Speaking generally, his opinion of wood as a material for paving does not appear to be very high. In some cases, where poor lumber made from dead timber was used, the blocks rotted and disappeared in a very short time. A pavement was, however, made from cedar poles cut into 8-in. blocks, and bedded in gravel. This has been found to last for several years without wanting repair, whilst white cedar will not rot for ten or twelve years. Mr. Sargent has found hard-burnt clay bricks very successful. Those bricks are burnt hard enough to vitrify the moulding sand on their surfaces, and they are thus proof against the attacks of air or water, being homogeneous, slightly elastic, and more resistant than granite. It is generally thought that bricks made from fire-clays are more suitable for paving than the common red clays, but in some parts of the United States bricks made from common clay have been in use for twelve years; some taken up after ten years had been worn less than $\frac{1}{4}$ in. Porous bricks are specially made in the United States for paving purposes. They are impregnated with creosote or bitumen, and, according to the Chicago *Journal of Commerce*, have been largely used in Nashville, with very good results. The bitumenising a little more than doubles the original cost of the bricks. One important point mentioned is that the wear is uniform, and this is accounted for by the fact that the more porous bricks absorb more bitumen, and so become harder, whilst they are impervious to wet, and, naturally, free from the disintegrating action of frost. An instance is given of a pavement of this description which was exposed to a heavy traffic for three years and a half, at the end of which time it was in excellent condition.

OUR contemporary *Engineering* gives in a recent issue some interesting particulars of steel beams used in the foundations of some of the buildings of Chicago. This city is built on a spongy alluvial soil, and some of the principal buildings are disfigured by unsightly cracks, due to settlement. Some of the later buildings have been sustained in

the most successful way by a system of independent foundations, wherein the various supports to the building rest upon foundations of an area calculated to sustain the load which will be imposed in a manner which will give a uniform intensity of load per unit of area upon the earth beneath. A different plan is followed in other buildings, in the endeavour to make the whole foundation as rigid as possible. Instead of accepting the condition of settlement and endeavouring to control results by arranging that such settlement shall be uniform, large beds of concrete have been laid to a depth of 2 ft., and upon these steel I beams are placed. These extend from 6 ft. to 7 ft. beyond the line of the building, and they are enveloped in concrete in order to prevent oxidation. Above the I beams there is laid a platform consisting of plates of cast-iron, upon which the structure is reared. In some cases, steel railroad-rails have been used.

A NOTE in the *Classical Review* for December, by Mr. A. S. Murray, on "A Vase Painting after Zeuxis," is sure to attract a good deal of attention. We are accustomed to think of the paintings of Zeuxis and his contemporaries as,—even in the matter of general outline and composition,—irrevocably lost. Here we have, in a large krater recently acquired by the British Museum, a design which is beyond a doubt, not indeed a reproduction, but "an artistic souvenir,—and the only one we possess,—of a picture which was famous for several centuries in antiquity." The scene shows the infant Herakles strangling the snakes in presence of Alcmene, Zeus, and other divinities. Pliny describes a picture by Zeuxis thus: "Magnificus est et Jupiter in throno adstantibus diis et Hercules infans dracones strangulans Alcmena mahe coram pavente et Amphitryone." We advise our readers to take the number of the *Classical Review* with them, and carefully inspect the vase itself; they will see that, making due allowance for the exigencies of the vase-painter's craft, they have a very close copy before them. We must again repeat that the *Review* never serves the general public better than when it thus enables the ordinary educated person to understand and appreciate additions made to our national treasure-house, and paid for by our national money. At the same time a visit of inspection should be paid to the small case of objects presented to the museum by the Cyprus Excavation Fund. They are conveniently placed together, and will shortly be discussed in the *Journal of Hellenic Studies*. The most interesting object is a gold pin, with the head in the form of a Corinthian column, with four bull's heads projecting from the acanthus leaves, like the Persepolitan capitals and those of the "bull temple" at Delos. Above, on the abacus, are four seated doves, drinking out of cups. An inscription runs down the pin, recording the dedication by a lady to "Aphrodite of Paphos," in letters of about the end of the third century B.C. In the same case the most prominent object is the head of a boy, possibly Eros. It is of the unsatisfactory sort of work which the Greeks seem generally to have thought good enough for miniature subjects, and reminds us of the head of the infant Ploutus in the Central Museum at Athens.

WHEN the publications of the German Archæological Institute were reorganised, it was part of the programme that from time to time supplementary volumes should be issued which should be in effect separate treatises on subjects not admitting of full discussion within the limits of an ordinary issue. The first of these ("Ergânzungsheft I.") has just appeared. It is from the hand of Dr. Josef Stirzygowski, and deals with the "Calendar Pictures of the Chronograph of the Year A.D. 354." These pictures are preserved in copies of varying dates in the Vatican and Barberine Libraries and in the Royal Library at Vienna. They are now for the first time reproduced by photography, and placed in regular sequence. As their editor rightly observes, they have, besides a high antiquarian interest, this special claim on attention, that they throw light on the gradual transition from Pagan to Christian art. The plates are thirty-five in number. Those representing personified forms are specially valuable. No one will deny that the first "Supplement Band" maintains well the reputation of the Institute, but subscribers to the "Jahrbuch" should bear in mind that they may expect from time to time to receive this trifling addition to their library at a cost of thirty marks.

THE fine ancient carved oak choir-stalls from the Monastery of Buxheim, in Bavaria, which we mentioned (*Builder*, May 12 of this year) when they were offered for sale by a London dealer, have been purchased for the Chapel of St. Saviour's Hospital, Osnaburgh-street, Regent's-park, and are now set up there.

THE *Australasian Builder and Contractors' News* of October 27 gives illustrations of the three premiated designs for the Thomas Walker Hospital, to be erected on an extensive site near the Paramatta River. We give some particulars, extracted from the same journal, in another column. The accepted design, by Mr. Kirkpatrick, shewn in a bird's-eye view, appears to be planned in accordance with the most approved sanitary principles, as well as with a considerable eye to picturesque effect. The hospital consists of various one-story pavilions of a rather "cottage-hospital" appearance, connected by long covered corridors with each other, and with the administration block, which occupies, of course, a central position onthe site.

IN an account which we printed last year* of Canons we spoke of a project by the "Grand" Duke of Buckingham and Chandos to build himself a town mansion, as designed by John Price, architect, 1720, along the northern side of Cavendish-square. The middle portion of the site, however, was used for the two existing well-known stone-fronted houses, each having a rusticated basement supporting a classic order. These sister houses were designed, it is said, by James, a joint-architect, with Gibbs and Shepherd of Canons. As subdivided they are now numbered 11-14. The doorways are still marked by their lamp-irons. The freehold of No. 11, towards the east, will be offered for sale by auction, about three months hence, with possession. The opening between the two houses leads by an incline, turning to the left hand, down to the stables. The whole site, including the garden, with other vacant ground at the rear, extends over an area of 13,000 ft. superficial. This square was originally planned in 1717-8, but various causes delayed the completion of the scheme. It formed part of the dower which the Lady Henrietta Cavendish Holles brought (1713) to her husband Edward (Harley), second Earl of Oxford and Mortimer.

PRESSURE of other matters has prevented our giving adequate mention before to the remarkable winter exhibition of the Society of Painters in Water-colours, which is a real triumph for English Water-colour Art. We do not know when we have seen an exhibition with so large a proportion of really fine and interesting work, to which it would be impossible to do justice in the space we can afford to matters not architectural. A special feature in this year's exhibition is the collection of studies for figures by Sir F. Leighton, Mr. Burne Jones, and Mr. Poynter, which are hung at the top of the room, and some of which are of great interest and beauty. Mr. Burne Jones reappears also, as a Member, with a very large water-colour (so-called, it seems to be all in opaque colour), "Caritas" (30), a richly-draped ideal figure in a style similar to a good many others of the kind which he has done; the interest is rather that of decorative effect than of human expression. Among other figure-subjects, Mr. Arthur Hopkins is exceedingly interesting with his group of foreground figures in "The Golden Hour" (43), a scene of which Whitby promontory and town form the background; the old woman on the right is an admirably characteristic study. So is Mr. Marks's old gentleman musing over "The Sundial" (35). Mr. Glindoni's "Revolutionists" (139) is a clever if disagreeable study of some disagreeable persons of the French Revolution epoch. Mr. Walter Duncan contributes a fine bold study of a rather over-blooming young woman under the title "English Roses" (313), the work of an artist who is not afraid of bright colour, and knows how to deal with it. Mrs. Allingham's "Rhoda" (382) is a beautiful female study of another type. The strength of the exhibition is, however, in its landscape, as is usually the case. The number of fine things is not less remarkable than the diversity in the style and manner of treating landscape, which would form an instructive study in itself, if we could go into it here. The finest works are really those in the broad style of water-colour, such as Mr. Eyre Walker's "Autumn in the Woodlands" (146) and "A Wet Day on Emery Down" (109), the latter a grand painting on a small scale. But it is impossible to refuse admiration for such an exquisitely-finished bit of topographical art (if one may so call it) as Mr. Gregory's "On the Vire, St. Lô" (49), a scene so picturesque in itself as to require nothing but accurate setting forth to make a picture. Mr. A. Hunt has never done anything more poetical than his "Wind of the Eastern Sea" (359), and "On the Way to the Maëlstrom" (196); in the latter, the colour of the water is strange and ominous in a remarkable degree. Sunlight,—actual sunlight,—glitters in Mr. Powell's "Autumn: Tor-aluinn Woods" (154), and on the hill in Mr. Marshall's large drawing, "Landing Nets, St. Ives Pier" (176), in which, perhaps, the foreground wants force rather. Several small landscape studies by Mr. Walter Crane are of interest, both for their powerful style and for the fact that they are his; we may mention especially "A Study from the Sand, Harlech" (65). Among other works may be mentioned Mr. R. W. Allan's "In Holland" (12); Mr. Thorne Waite's "Dividing the Flock" (22); Miss Maud Naftel's "The Fields breathe sweet" (50), an exquisite little summer landscape, and Mr. Robertson's "An English Meadow" (51) — a work of rather the same stamp; Mr. Hardwick's study of "Raspberries and Strawberries" (73), almost equal to the late Mrs. Angell, but not quite; Mr. Pilsbury's little country-house scene, called "Evening" (96); Mr. Thorne Waite's "Lunch-time" (120), an idyll equally charming in figures and landscape; Mr. Gregory's "Bay of St. Michael" (140), a large sketch from a high point of view, with an immense amount of detail indicated; Mr. G. A. Fripp's "Dunstaffnage Castle" (160); Mr. Albert Goodwin's "Durham" (187); Mr. Henry Wallis's "In the Porch of the Mosque of Sultan Hassan, Cairo" (199), a brilliant piece of painting of architectural detail; Mr. Robertson's "The Hareem Door" (209), an odd but unquestionably powerful work; Mr. T. J. Watson's "Queen's Bower, New Forest" (254); Mr. R. W. Allan's "Dordrecht Cathedral" (265); Mr. Andrews's "Study from my Bedroom-window, Rotterdam" (327), a clever architectural subject; Mrs. Allingham's exquisite "Spring Days" (333), and "On the Sunny Shore" (337), the latter with a charming little girl figure; and Mr. Marshall's "Amsterdam" (381). In referring to Mr. Walter Crane's contributions, we should have mentioned that he sends also some studies from the remains of Athenian architecture—a "Sketch of the Propylæa" (59), "Sketch of the Acropolis" (243), and "Sketch in the Ruins of the Parthenon" (371).

A Russian School of Painting in Rome. The Russian Government has decided upon establishing a State-supported school of painting in Rome, at which rising young Russian artists may study at a minimum cost under the best teachers.

* See the *Builder* of June 25, 1887.

THE DOOM OF NEWGATE.

A CHRONOLOGICAL SKETCH.

His [Dance's] *chef d'œuvre*, however, was the design for the prison at Newgate, which, though only a prison, and pretending to be nothing else, is still one of the best public buildings of the metropolis. . . . . There is nothing in it but two great windowless blocks, each 90 ft. square, and between them a very commonplace gaoler's residence, five windows wide and five stories high, and two simple entrances. With these slight materials he has made up a façade 297 ft. in extent, and satisfied every requisite of good architecture.

JAMES FERGUSSON, "History of Architecture," iii., 296. (Edit. 1862.)

TWENTY-FIVE years ago an exceptionally extensive clearance was made in the ward of Farringdon Without for the construction of Holborn Viaduct. A fine and rare prospect over the Fleet-valley then lay before anyone who stood over the uncovered site of the old bridge, at a short distance from the City's later wall. At that spot, on the ancient Watling-street, his range of view extended eastwards to Smithfield and Clerkenwell, Ludgate and Blackfriars, on either hand the steeples of St. James's and St. Bride's rising loftily from their midst. In the foreground appears the pinnacled tower of St. Sepulchre-in-the-Bailey; beyond this the steeple of Christ Church, Newgate-street, stands out from above the still vacant site of Giltspur-street Compter; in the farther distance emerges the beautiful stone spire, Wren's handiwork also, of St. Vedast, Foster-lane. Even more striking, perhaps, than any of these was the aspect, as seen from the hollow of Holborn-hill, of the massive majestic pile whose walls, their own doom at length decreed, will echo to Robert Dowe's execution bell at St. Sepulchre's no more. For more than a hundred years Newgate Prison, as we know it, has stayed in solemn state just without the wall upon the brow of that acclivity which, with a rapid river coursing turbulent below, had in ages remote afforded defence for the capital. Why, then, a "new gate" in so pristine a quarter?

Stow's circumstantial account of the origin of this name, being to the effect that it was the fifth and latest gate in the City wall, is commonly rehearsed with approval, though we are inclined to think without due inquiry. We have never felt able to accept his explanation as altogether satisfactory, any more than those he gives us in respect of certain other of the City Gates. It is likely enough that the additions made by Bishop Richard to St. Paul's in the interval 1108-27, did oblige the citizens to take for their traffic westwards some route different from their former way through Lud Gate. Yet the fact that another road is chosen does not in itself demonstrate the fresh track to be a new one. And a new one it was not, by any means. Controversial questions apart, it will suffice here to observe that at the modern Newgate, or at least very near to it, just northwards, the old highway, possibly a British road from the North-West, entered London, traversing the later rampart that had here been thrown across its path, *circa* 365 A.D. Continuing south-eastwards, past the Querne, it pursued its course towards the crossing over the Thames, on a route which is still commemorated, if not actually marked, by the street to which it gave a name beyond St. Paul's. And this, be it noted, before the metropolitan cathedral was built. These and other points considered, it would be scarcely unreasonable to contend that the successor of the earlier West Gate, afterwards known as Chamberlain Gate, represented one of the oldest rather than latest of the City gates.

Chamberlain, or the Chamberlain's, Gate was standing, *temp.* William I., across the street between the now prison and Warwick-lane. It may have borrowed its style from William le Chamberlaine, who was seised from the King of land in the neighbourhood. That holding, of 13 acres, known as "No Man's Land," and cited in Domesday, is by some considered to have been the site of the Charterhouse, whilst others would identify it with a vineyard by Holborn. This gate was rebuilt in the reign of Henry II. or that of Richard I. Like others of the City gates, it was soon used as a prison. It certainly so served *temp.* Henry III., for in 1218 that sovereign writes to the sheriffs, Joyce le Pesur (bell-founder) and John Vyel, already charged with its custody, a command to repair the gaol, and says their expenses shall be allowed to them upon their account with the Exchequer.

From about this time, too, it became the scene of those annals of misery, dissipation, and disease whose story has been told too often to need repetition here. Whether in some hope thereby to assuage such evils cannot be said; but it is known that in 1400 Henry IV. gave a charter to the Corporation for the control and ward of the gaol. What was even then described as its ruinous and horribly loathsome condition excited the reforming spirit of Sir Richard Whittington. In terms of his will a licence was granted, in 1st Henry VI., to John Coventre, Jenken Carpenter, and William Grove, executors of Whittington's estate, "to re-edify the gaol of Newgate, which they did with his goods." And thus our tale comes down to the veritable Newgate, in both form and name. The new building was of the familiar type, oblong on plan, with archway and northern foot postern, four flanking octagonal towers, and battlements. Later enlargements,—to be noticed hereafter,—mainly along the southern side, changed the ground-plan to something like a letter H; whilst the added portion, facing down Old Bailey, had an entrance and gaolers' lodge, with the cruel motto, *Venio sic fur*, above. The gate's two fronts carried ranges of pilasters with entablatures, in the Tuscan order, in the niches whereof stood seven symbolical statues—one of them, in honour of Whittington, representing Liberty with a cat at her feet. The survivors of these figures, as left after the Gordon Riots, stand, four in number, in the southern wing of the present fabric. In response to the head-gaoler's petition, the eastern part of the gate was subsequently repaired. That work, together with the restoration after the Great Fire, was recorded by an inscription which we find in Hatton:—"This part of Newgate was begun to be repaired in the Mayoralty of Sir James Cambel, Knt., Anno. 1630, and finished in the Mayoralty of Sir Robert Ducie, Baronet, April, Ann. Dom. 1631; and, being damnified by the fire in 1666, it was repaired in the Mayoralty of Sir George Waterman, Ann. Dom. 1672." He further says:—"Here are these arms: Sable a Fess Chequy or and azure with an anulet for a difference." He also refers in laudatory terms to the interior economy of the gaol. Meanwhile, the prison had been refronted—in 1638; and during the Commonwealth the Phœnix tavern, in Newgate-street, was added thereto. The repairs of 1672 are said to have been carried out by Wren.

Having compared various accounts of the interior arrangements of the gaol at this stage of its history, we find they all differ, and this not only in the names but in the situations of the several rooms. Yet since Major Griffiths's recent work* should be the most correct in this regard, we classify his particulars as follows:—The wards consisted of four divisions, known as the Master Debtors' (1), Common Debtors' (2), Master Felons' (3), and Common Felons' (4) Sides. We find that the ground-floor comprised to the north, part of the Keeper's House, beneath it the Condemned Hold; to the south (along the street),† the Lodge; Jigger, or visitors' room, and having below the drinking-cellar (3); Stone Hall (2), and Partner's Room within; Stone Hold (4): (along the back) Hall Ward (1), being 21 ft. by 15 ft.; Tangier (2); and Lower Ward (4); west of Stone Hold and Lower Ward was part of Press Yard, or exercising-ground. First-floor, north,—Stone Ward (1); My Lady's Hold; Middle Ward (4): south—King's Bench Ward, 21 ft. by 15ft. (1); First Ward (3); and west of these, part of Press Yard. Second-floor, north—the Bilbows; Press Room; Jack Ketch's Kitchen; Waterman's Hall for women (4); Debtor's Ward (2); south—Second and Third Wards (3); part of Press Yard; west of these, and overlooking Holborn-hill, was the Castle. Third-floor, north—Second Ward, for women (3 and 4); Women's Ward (1 and 2); High Hall, 33 by 28 by 12 ft. (2); south—the Chapel. The Women's Second Ward on this floor corresponds with the "Red Room" up to which Jack Sheppard made his way, and so through the chapel, on to the lower and upper leads on the night of Oct. 15, 1724. Major Griffiths avers that Harrison Ainsworth's graphic account of this feat is in substance authentic; he quotes from it in his book. We fancy that Cruikshank's illustrations of the escape are based upon a set of views published by T. Bowles and J. Bowles [no date].‡

In the year 1766 an Act, 7 Geo. III., was passed authorising the Corporation to raise moneys for divers useful works at 3½ per cent. interest, payable by a tax of 6d. per ton upon coal or culm imported into the City. Of these moneys £50,000 was apportioned for the rebuilding of Newgate. Eleven years later another Act was obtained for further subsidies in that behalf. The work, indeed, proved more expensive than was anticipated. The foundations alone cost £19,000. As the site chosen lay over the wall ditch, it was found necessary to excavate to a depth of 40 ft. for a solid base whereon to lay the brick vaulting. In exchange for the new prison and sessions-house site the Corporation surrendered to the public a plot of land at the corner of Old Bailey and Newgate-street, estimated at that time as worth 10s. per foot, running measure, and at 15s. for building purposes. They spent, moreover, out of their own funds £14,464. 13s. 9d. upon the sessions-house, and £6,250 in purchasing the freehold of some houses for making better approaches. For this work George Dance, City Surveyor, was employed. His prison elevation, 99 yards long, is so impressive, yet so plain withal, that every one of the rugged, weather-beaten stones seems eloquent of its purpose. On the page of Fergusson's volume which is quoted above will be found a drawing of the original elevation, showing the pediment of the central house, which was afterwards replaced with an additional story above the cornice. The inclination of the ground, southwards, along the whole front is now 7 ft. 3 in. below level. Dance's plan embraces a central block and two wings. In the central block stands the Governor's quarters, between two turnkey's lodges, which are distinguished by the fetters above their portals. Behind the house is an arcade bearing the chapel. The remaining area of the central block was assigned to the Men Felons' quadrangle, wards, taproom, and a range of cells for the refractory. This quadrangle is now subdivided, and in one of the two exercising courts stands the shed which contains the gallows. The ward and cells to the east have been converted into day-wards and an infirmary. In one of the day-wards stands the whipping-block. The southern wing formed the Women's and State-prisoners' side. The northern wing was appropriated to debtors, and had its own taproom, quadrangle, and wards. The first stone of this building, whose outer wall is nearly 4 ft. in thickness, was laid on May 31, 1770, by Lord Mayor Beckford, who died on June 21 following. Seven years afterwards the old gaol was finally demolished, a portion of its site being taken for the ordinary's house in Newgate-street, and the north-eastern corner of the new block. The larger wards measured about 38 by 15 ft., the smaller wards about 24 by 15 ft. The chapel was built to admit 350 people, a number that was largely exceeded when the public were permitted to crowd in to hear the condemned sermons. Its interior has since been altered, and though the condemned yet sits apart from his fellows, a stove occupies the place of the central condemned pew, with the coffin which did duty there. Each of the two condemned wards, communicating with the press-yard between them, measured 31 by 18 ft. The condemned cells, of stone, and vaulted, were ranged on three floors, five cells to a tier. Their areas, as given by John Howard, who surveyed the gaol in 1779, ranged from 9 ft. to 9 ft. 6 in. by 6 ft. Some water-colour drawings of these are in the copy of Pennant's "London" (Soane Museum), which belonged to Fauntleroy, who was hanged at Newgate on Nov. 30, 1824, for forgery. This prison was unfinished when, on June 6 and 7, 1780, it was pillaged and burnt by the "No Popery" rioters, who—bent upon freeing their own comrades—set some 300 prisoners at liberty. Their attack, at first directed against Governor Ackermann's house, was witnessed by the poet Crabbe, then friendless in London. Dr. Johnson, in company with Lord Stowell, went to Old Bailey, where, as he writes to Mrs. Thrale, "the Protestants were plundering the Sessions House. . . . There were not, I believe, a hundred, but they did their work at leisure, in full security, without sentinels, without trepidation, as men lawfully employed in full day. Such is the cowardice of a commercial place." The damages involved a further outlay of 30,000*l.*, of which the greater part was voted by the Commons.

Upon the advocacy of the philanthropist Howard, the place of execution was removed from Tyburn to Old Bailey in December, 1783, when, as we gather, was pulled down the block of mean houses—Middle or Hart-row—at the northern end of the street. Henceforward

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* "The Chronicles of Newgate." By Major Arthur Griffiths, one of H M. Inspectors of Prisons. (London: Chapman & Hall [Edit. 1884].)

† Where not otherwise indicated, we pass on each floor from west to east.

‡ Many escapes have been made; on one or two occasions by tearing up the cellar floor and so through the sewers. On March 10, 1716, Thomas Forster got away in the night; and on May 4, same year, Brigadier Macintosh and fifteen others overcame the warders by sheer force and released themselves.

"black Meggie" was put together overnight, as occasion required, before the door—still known as the "debtors' door"—in the northern wing. The apartment within now serves as a kitchen. The doorstep is 2 ft. 1 in. above the footpath; beneath, and on either side, remain six staples by which the scaffold and steps were fastened on to the prison wall. These form the last external relics here of public executions, abolished in 1868. On the building (1813-5) of Whitecross-street prison, William Montague, architect, the confinement of debtors ceased in Newgate, and their wing was added to the felons' side. By 3 Vict., cap. 56, it was enacted that prisoners might be lawfully kept in solitary confinement. On April 10, 1840, was laid the first stone of Pentonville Model Prison, on Colonel Jebb's plan, for 520 cells, at a cost of over 90,000*l*. Several prisons, upon the separate system, were speedily built in different parts of the country. A proposal to enlarge Newgate resulted in the construction of Holloway City prison, which was opened in 1852. The design is by Bunning, who introduced some fantastic elements copied from Warwick Castle. But the condition of Newgate still called for amelioration. In 1857-9 the felons' side, northern wing, was reconstructed within the outer wall, so as to contain 130 cells, with two cells, double-sized, for the condemned, and twelve more for reception and punishment. Within the next three years, nearly fifty cells were ready for women in the southern block. By the Prisons Act of 1877 the management of all our prisons was committed to the Home Office, and under a new scheme for concentration, Newgate was no longer required, save for the detention of prisoners awaiting trial during sessions, or under sentence of death. On opening sessions at the Central Criminal Court on January 30, 1882, the Recorder prefaced his charge to the grand jury with some interesting observations upon the events which, since the last previous commission of 1835, had rendered it necessary to issue a new commission of oyer and terminer and general gaol delivery. Having spoken of the City wall, we will add that the so-called "Bird-cage Walk," which forms one of the approaches from the prison to the Court, runs along what we are informed is a fragment of the ancient wall. On the wall-side are cut the initials of some of the criminals, who after execution are buried beneath the flagstones, a grating, open to the sky, being overhead.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The third ordinary meeting of this Institute for the present session was held on Monday evening last, at Conduit-street, Mr. Alfred Waterhouse, R.A. (President), in the chair.

Obituary.

Mr. W. H. White (Secretary) announced the decease of Mr. C. F. Hansom, of Bristol (whose death was recorded in the *Builder* a fortnight ago, p. 423, *ante*), and Mr. Henry J. Paull, of London, and lately of Manchester, Fellows.

The Ashpitel Prize.

Mr. J. Macvicar Anderson (Hon. Sec.) said that at the last meeting of the Institute, the names of those candidates who had passed the recent Examination in Architecture held in London were announced.* It was then stated that from want of time the Board of Examiners had not been able to make their recommendation to the Council in respect to the Ashpitel Prize, which was awarded to the candidate who, throughout the examinations in one year, had obtained the highest marks. The Board of Examiners had now recommended that the prize should be awarded to Mr. Henry Ernest Stelfox, of Manchester, who had most highly distinguished himself throughout the two examinations held in London, and the one held in Manchester during the past year. Two gentlemen ran Mr. Stelfox so extremely close in point of merit that the Board of Examiners had recommended that an unusual prize should be given to each of those gentlemen, viz., Mr. Paul Waterhouse, M.A., London, and Mr. Henry William Burrows, London. It was a source of gratification to have the pleasure of awarding a prize of merit to the son of one so justly respected as was their President (applause).

* For list of the names, see *Builder*, p. 436, *ante*.

Election of Members.

A ballot then took place, when the following new Members were elected, viz.:—

As Fellows.—Messrs. Henry Lord, Manchester; Henry Bridgford, Manchester; William Horton, Manchester; John Ely, Manchester; John Littlewood (Associate), Manchester; William Henry Littlewood (Associate), Manchester; Joseph Stretch Crowther, Alderley Edge; John William Trounson, Penzance; James Maxwell, Manchester; William Charles Tuke, Manchester; Thomas Edward Bridgen, Manchester; Edward Schröder Prior, M.A., London; Oswald Cane Wylson (Associate), London; and William Taprell Allen, London.

As Associates.—Messrs. Philip Edward Barker, Manchester; James Diggle Mould, Manchester; and John Arthur Berrington, Liverpool.

The President added that it must be gratifying to the Members to find so many of their Manchester brethren coming up for admission as Fellows (hear, hear).

Musical Requirements in Church Planning.

Mr. John Belcher next read a paper entitled "Musical Requirements in Church Planning." The following is an abstract of the paper:—

The author considered that the development of ecclesiastical music of late years forced certain problems upon the attention of the architect, and that in church planning the position of voices and instruments had now to be considered. The first introduction of organs was in the seventh century, but they were generally used in conjunction with other instruments. Minstrels' galleries might still be found in small churches, the west end being the favoured position. During the period from Henry VIII. to Queen Elizabeth instrumental music was still adhered to, but the objections of the Puritans were such that in 1643 nearly every organ in use had been destroyed. From the Restoration, however, to the present day, organs were recognised as essential. It was only fifty years ago that 32-ft. pipes were first used in England, although on the Continent the organ became very large at the end of the fifteenth century, reaching a climax in the seventeenth and eighteenth centuries. In most cases they were forced to migrate from the chancel to the west end, in some to the transept, and where neither position was available they were relegated to the triforium of the nave. The choir being seated in the chancel, the position of the organ near them seemed essential, but other eventualities, such as additional bodies of singers and an orchestra, had to be remembered. In future church planning these requirements would have to be considered. The organ should be in a position not less or much less in height than the nave and transepts, the so-called "organ-chamber" being a mistake. The size of an organ should not be regulated by the size of the building, but by the number of "stops," the combination of which regulated the extent of the volume of sound. A good foundation tone was always necessary, to secure which speaking-room had to be provided for 8-ft., 16-ft., and even 32-ft. pipes on the pedal-organ. These dimensions had to be considered in providing sufficient space. The top of a chancel-screen or rood-loft was hardly a suitable position for an organ of any size, as, although it possessed attractions from an artistic point of view, it was prejudicial to the organ tone. Organists and organ-builders generally considered that in fairly large churches the organ should be raised about 12 ft. above the ground, and a divided organ could not be recommended. Proper and easy access to every part for repairs and tuning should be provided, and attention given to the position and space for the "feeders." An equable temperature was also important. The organ-case might be treated as an enclosure, in the way usually adopted by the Italians, having no special relation to its contents, wholly or in part concealed; or in the general, and as the author thought appropriate, way, of using some of the pipes themselves as decorative features in a framework enclosing the other parts of the organ. The use of iron in the construction of an organ-case he protested against, while wood was a material in sympathy with the organ, and the most consistent for the construction of its case. Sound travelled so slowly that any division of choir-organ or orchestra was destructive of precision, and they should therefore be compactly arranged, and as far as possible on the same plane. Mr. Belcher then described a sketch of a plan by himself to illustrate his meaning. The organ was placed in a special transept, east of the great transept, equal in height to the rest of the church, and forming the western end of the morning chapel; it was virtually open on three sides, but was slightly sheltered; outside the main wall, and between the buttresses, a staircase with a wide landing served as a tuning place for an orchestra before entering the gallery; this gallery, projecting into the chancel, gave space for an orchestra, which might be extended eastwards if required. The floor of the organ was 12 ft. from the ground, the music gallery was lower, and as the floor of the chancel was raised by steps, all the performers were brought into close relation with each other and the organ. The usual north transept afforded an excellent position for grouping large bodies of voices adjoining the organ and orchestra, and easily under the control of a conductor at the western angle of the gallery. A corresponding gallery on the opposite side of the chancel would provide for female singers at ordinary services.

The President said he would call upon Mr. Statham, who was both an architect and a musician, to open the discussion.

Mr. H. H. Statham proposed a vote of thanks to Mr. Belcher for his exceedingly practical paper, which had the merit of showing how much useful suggestion could be got into a very short space. To have the subject taken up from a musical point of view by an architect of Mr. Belcher's ability showed that architects were coming to consider the importance of the subject, and to look at it in a practical manner. After the remarks which had been made that evening, he hoped they might all feel that the "organ-chamber" was doomed. He had suffered from that for many years, for to put an organ in such a position was one of the most cruel things that could be done. The difficulty, however, was that the subject was a complicated one, which could not be considered purely from the musical point of view. The architect had to consider, in the first place, ritual; in the second place, the position of the organ with regard to the singers; and, in the third place, the painful subject to which Mr. Belcher had referred,—viz., money. Now, ritual was a thing he (Mr. Statham) did not profess to know much about; but he believed that if they proposed, in accordance with some of the illustrations shown, to put the organ at the end of the chancel, or behind the high altar, most clergymen would look rather black upon them. Musically speaking, however, he considered that to be the best position for the instrument. The organ should have a central position, where it would sound well down the church; it should be near the choir, which again should be in front of the congregation in the chancel; so that all these requirements tended to indicate that position, unorthodox as it was, as the best from a musical point of view. Next to that, there was no question that the best situation, especially for a large organ, was the old position at the west end. Such an instrument as would be placed there was, of course, far larger than was necessary to accompany the choir, but it must be remembered that the organist also wanted to show off his powers, and play his fugue after service. An organ placed at the west end was, however, in a disadvantageous position for supporting the choir. There was one way out of the difficulty, which Mr. Belcher appeared rather to object to, viz., the long movement system, for which we had now the aid of electric action. In a large church, and where there was plenty of money, the solution would be to have a small choir-organ close to the singers, and a large organ, for grand musical effects, at the other end. Both instruments could be controlled from the same key-board, and he was compelled to differ from Mr. Belcher when that gentleman said it was a disadvantage for the organist to be away from his instrument. So long as the connexion was all right, it was rather an advantage than otherwise, for the player near a large organ seldom knew fully what he was doing, or how the instrument sounded at the other end of the building. Therefore, when there was unlimited money, it would be well to have a small organ to support the choir, and a large one for grand organ purposes, and for accompanying the congregation when necessary. With regard to the choir-organ on the screen, after many years of hearing and playing cathedral organs, he believed that if an organ sounded harshly in that position, it was the fault of the instrument. It was curious to hear this position now referred to as architecturally good but musically bad; a century or two back the opinion was the reverse, and Wren

complained that St. Paul's was spoiled by the prominence given to the "box of whistles." He (Mr. Statham) thought that musically the position was a magnificent one, the instrument having full space to develop its sound; but the reason why the organ was taken off the choir-screen in cathedrals was that it began to get so large, and the system of sticking it all about the building was then adopted. He was astonished, on his first visit to Worcester Cathedral, to find the organ-pipes standing about in all directions in the choir aisles; and that, of course, took away all unity from the instrument. In a cathedral where there was a large organ, he would be inclined to put the manual-pipes in the old position on the screen, and the pedal-pipes by the side down below. From a musical point of view, he maintained that the old screen position was a fine one, and if the organ sounded harsh there, it was probably a bad instrument. He very much agreed with what Mr. Belcher had said as to some of the modern organ-cases, and the mere sticking-up of the pipes without any attempt at design, so often to be noticed. He liked to see the pipes in the front of the instrument, better than a mere ornamental case, which had no suggestion of an organ. The pipes, however, should not be taken far from their wind-chest. When pipes were taken off the place whence they received their wind, the wind was conveyed to them by tubes, and it was desirable not to have these too long and too complicated; so that when an architect was planning a case for a large organ, he should be content with a few pipes in front, and let the organ-builder have the pipes as near the sound-board as possible. Sometimes the pipes were planted here, there, and everywhere, and the unfortunate builder was at his wit's end to get the wind to them. In regard to the design of the cases, the large pedal-pipes were mostly of wood, and were generally kept in the background, but he had sometimes thought they might be made fine use of in designing, as a contrast to the metal pipes. One place where they had been so used was at St. George's Hall, Liverpool, where Cockerell designed the organ-case, placing the metal-pipes in front, and putting the 32-ft. wooden pedal-pipes in a semicircle behind the organ, where they formed a fine background to the design of the front.

Mr. William White seconded the vote of thanks, and said that this was a subject which he did not remember having heard discussed by the Institute before, though it was one of the most practical questions of English Church arrangements with which architects had to do. He entirely agreed with Mr. Statham as to the necessity for two organs in large buildings. These would hardly be required in the case of small buildings, but in large buildings there ought to be a choir-organ and an organ for purposes apart from the choir. The chancel-screen was a very good situation for the choir-organ if it was kept sufficiently low, and prevented from interfering with the general effect of the building; in other words, a large choir-organ ought not to be erected in a small building in such a position that it would entirely screen the architecture of the chancel, and bring the pipes so near the roof as to be unpleasant. Reference had been made to the western organs in the Roman churches, but he did not think it was quite a question as between the Roman and English Churches in regard to that matter; the question was as regards the manner in which the service was conducted, because in the English Church they had chiefly to look to the congregational use of the organ; or, in other words, it was to be a congregational service, and not merely an æsthetical one. There were portions of the service which ought to be æsthetic, and to be merely listened to by the congregation, and on that account the western organ was essential. A great deal had been lost in the English Church by the utter abandonment of the orchestral support of the singing, and its being superseded entirely by the organ. That was caused, no doubt, by the very low and slow dreamy tunes which the old performers in the western gallery used to play, and which some present might remember. When there came a change in the services of the Church, there necessarily came also a change in the descriptions of the accompaniment; and instead of its being a reformation, reforming the orchestra in the western gallery, there was the radical measure of simply sweeping it away. As regards the purpose of the æsthetical part of the service, it was impossible to look for any æsthetic service in the bulk of village churches; therefore the service must be almost exclusively congregational, supported by the choir in front of them, and not drowned by the organ. There was no doubt that the organist, thinking of musical effects apart from the congregational service, would strive for a large organ, and, he believed, there was not one organist in ten who did not care more for his organ than for the choir. With regard to placing the seat under the front of the organ, he had met organists who very much preferred that arrangement, because it gave them a little shelter from the great noise of the instrument. His first desire in constructing an organ-case was to ascertain the views of the organ-builder and the organist, and then to adapt them to the purposes of the building.

Mr. C. F. Hayward said he was particularly pleased to hear what Mr. White had said, because he felt that organs were very often over-done in churches, not only in the manner in which they were used by the organists themselves, but by the organs being made too large for the building. He knew a case in point where they had not suffered from the unfortunate disease of want of money, but where, on the contrary, they had had rather too much of it, and where it would have been really better had a few hundred pounds less been spent upon the instrument. The result of it was that the pipes reached nearly to the top of the building, and he was afraid if the organ was played at its full power it would almost blow the roof off. The result of this organ was that every time the service was performed the choir was drowned, and the congregational worship was overriden by the amount of actual noise that came from this huge "box of whistles." This same instrument was blown by hydraulic power, which was applied in such a way that there was a continual squeaking going on even during the period of the service when there should be absolute quiet. That was, he believed, one of the difficulties connected with the hydraulic arrangement. It was delightful to him to hear Mr. White revive the desire for instrumental music of another kind than that of the organ. The organ nowadays seemed to take away all sort of interest in the instrumental music which used to be performed in the churches. He was old enough to remember when the village choir had flutes, violins, and every kind of instrument that could be employed in the service; but now it would be extremely difficult, he believed, to get such a support to the organ. When that occurred, it was extremely delightful to him, as in the case of some recitals he had heard in Westminster Abbey, where the organ was supplemented by violins and harps. With regard to cases, the finest organ he believed, in a secular building, was one with no case, and where the pipes could not be seen. He referred to that designed by the late Mr. W. Burges for the Speech Room at Harrow School. There the organ was placed behind the platform, which was 5 or 6 ft. away from the end wall, the place between the platform and the wall being occupied by the instrument. That seemed to bear out what Mr. Statham had said, that the best position for the organ in a church was between the altar and the east-end, and if the altar could be placed some 10 or 20 ft. away from the east wall, the organ might be built behind it. As to placing the organ at the west end, he believed that the organ in Amiens Cathedral was placed 40 ft. high on brackets against the western wall. The effect was very fine when the choir-organ was being played, supplemented by bursts of music from the western organ, which gave the æsthetic effect that had already been spoken of.

Mr. Ralph Nevill observed that there were many tempting byways to lure them from the strictly architectural discussion of the subject. One of the most important practical points brought forward was that of placing the organ at the east end, behind the altar, which they had been told by Mr. Statham,—who was an authority on the matter,—backed up by Mr. Belcher, would be an excellent place as far as regards sound. If an architect went to an ordinary parson, however, and suggested such a thing, he would hold up his hands in horror; but, on the other hand, there were plenty of parsons who were always on the look-out for some novelty (laughter), so that he did not think it was absolutely hopeless that such a plan might be carried out. He himself did not see any possible objection to it, because most of the church builders were only too glad of an excuse for not having to put in an east window, because, for artistic effect, it was better without a light there. It was not necessary to show the organ-pipes in such a position; but he saw no reason why the face of the organ towards the congregation should not be treated like a large reredos, —coloured with painting and woodwork. That would be a most appropriate cover and screen for the altar, and would add to the ornamental ending of the church, especially if it utilised the apsidal form. He agreed with Mr. Belcher, —from studies he had made in connexion with sound,—that a certain amount of compression was desirable to give the full value and volume to the sound which came from the organ, and he also considered it would be well to have the organ a little way off from the choir. By so doing the choir would have a better chance of being heard than where the organ came nearer to the congregation. Mr. Statham had spoken of the screen being a good place for the organ, but that depended upon where the congregation were seated. In a cathedral there would be sometimes the congregation in the choir, and sometimes the congregation in the nave. When the congregation was in the choir, the screen might be a good place for the organ, because then the organ was further from the people than the choir. But he did not consider it was a good plan to have the choir in the ordinary place, and the organ standing between them and the people in the nave. No doubt a western gallery was the finest place for the organ. At the Pro-Cathedral at Kensington, in Monsignor Capel's time, they had the most magnificent singers, and the effect of the music from the fine organ rolling over the congregation was certainly superior to anything he had heard. But then came in the difficulty that it was necessary to have the choir-organ as well, and he could not agree that an organist could produce the best effects on detached organs by means of electricity.

Mr. E. J. Tarver said that in Mr. Belcher's plan the organ was placed on the north side, and he believed that organ-builders considered that the best place for equability of temperature.

Mr. George Aitchison, A.R.A., said that there was little of the beautiful to be seen in the organ-cases. In fact, he only remembered one which showed any merit, viz., one at Siena, to be seen in Mr. Hill's book on organs. The Spaniards also were the only people who set out their organ-pipes like the trumpets to be seen on the bassi-relievi of the ancient Romans.

The vote of thanks was then put, and carried by acclamation.

Mr. Belcher, in replying, said that Mr. Statham had spoken rather from the organist's point of view, while he had rather treated the subject from that of the architect. When the organ was put on the screen, the volume of sound was apt to overshadow the voices of the choir when the congregation were in the nave, and that arrangement was only adapted to an organ of small size. For ordinary purposes, where the choir were seated in the chancel, the west-end organ was inconvenient. He had been rather considering the best position for the organ in a moderately-sized church, in which case it would hardly be wise to provide two instruments, though in a cathedral some such arrangement might be attempted. He gathered from Mr. Statham that both organs might be played from the chancel. (Mr. Statham: "It has been done.") He did not think it had been very successful, because a good deal of the organist's touch must be lost.* The Amiens Cathedral organ was a fine one, but, even in that case, there was a little too much reflected sound. The Haarlem organ had the advantage of being spread out, so that it could all be seen. It had no swell, and therefore required a great number of stops to give diversity. Plenty of space was necessary for an organ, so that there might be easy access to every part of it from the inside.

The proceedings then terminated.

Trade Smoking Concert.—On Saturday last, Dec. 15, the office staff of Messrs. Wm. Brass & Son, Old-street, St. Luke's, held their fourth annual smoking concert at the "Falstaff," when the clerks and friends to the number of 300 spent a very enjoyable evening.

* This is quite an illusion. Mr. Belcher and others who objected to this idea are probably not aware that in England all large organs of the best make are now built with artificial mechanical means of helping the touch, even when the keyboard is close to the organ. The object is to save muscular labour to the player, which becomes considerable in the action of a large organ. There is, therefore, already an artificial touch interpolated between the player and the valve, and when once this is done the distance, more or less, between the two makes little difference. You could not tell by the mere feel of the key whether there were five yards or fifty yards between it and the pipe. —ED.

Illustrations.

THE TRIFORIUM OF THE PRESBYTERY, WELLS CATHEDRAL.

THE drawing shows portions of three bays of the south wall of the Presbytery, which illustrate an eventful period in the history of the Cathedral. The ground story arches to the right are those of Bishop Jocelyn's choir (1206-42), while that to the left is the work of Bishop Drokensford, who added three bays a century later, the crown of the Bishop's throne just concealing the junction. The singular disregard of the Mediæval architects for the inventions of their immediate predecessors is remarkably illustrated in the design of the triforium story, which, with the whole of clear-story and vault, was continued from Drokensford's eastern bays over Jocelyn's earlier work as far as the crossing. The string course over the great arches is not continued, and there is an alteration of level at the cornice of the triforium, entirely Drokensford's work, which is probably intended to emphasise the general freedom of treatment. A. B. PITE.

BOARD SCHOOLS, LAVENDER HILL.

THE proposed Board School at Lavender-hill, Clapham Junction, will accommodate 800 children, and will be erected with a capacity for extension to 1,600. It will be of three stories, for boys, girls, and infants, and graded in the ordinary manner.

Upon the same site (which is an extensive one) will be erected a school for the instruction of pupil teachers, containing approximate accommodation for 216, and consisting, on the ground-floor, of three class-rooms for thirty-six each, with a large assembly-hall (suitable for examinations, lectures, &c.); on the first-floor three similar class-rooms, and a large chemical laboratory; and on the upper floor a drawing class-room, with covered and open gymnasia. The pupil-teachers are taught in mixed classes, but have their separate entrances and exits, cloak-rooms, lavatories, offices, &c. The class-rooms will be seated with single desks.

The general scheme will also include upon the site a school for instruction in cookery, and a house over same for the school-keeper.

The illustration is reproduced from the drawing in this year's Exhibition at the Royal Academy. The architect is Mr. T. J. Bailey, architect to the School Board.

THE CHARLES II. WING, GREENWICH HOSPITAL.

THESE measured drawings of a very good bit of Wren's work were made by Mr. Haywood in competition for the Royal Academy silver medal for drawing of this class, which was awarded to him. The details are carefully given, and should be of interest to some of our readers in the present enthusiasm for architectural detail of this class.

It should be observed that the notes as to "inch scale," "6—one-inch," &c., on the drawing, are not correct on the reduction; they apply to the original drawing, which was on a much larger scale. There were too many of these notes of scale to make it convenient to remove them in the lithographed reduction, but there are sufficient drawn out scales and figures to give the correct data as to scale.

No. 78, Cornhill.—In reference to this building, illustrated in our last, we learn that the brick panels typical of Marine Insurance, to which reference is made in our description of the building, were modelled and carved by Mr. Gilbert Seale.

Boyd & Sons' New Stoves.—An "Automatic Ventilating Stove," just patented by Messrs. Alexander Boyd & Sons, offers a very convenient means of drawing a current of fresh warmed air into a room, and extracting the vitiated air. The stove has hollow chambers beneath and at the sides, into which air is drawn from an inlet communicating with the outer air, and an extract draught is formed by the smoke-flue. It is simple in construction and in working, and likely to answer its purpose well. The same makers' "Patent Coke Battery," which we have also inspected, is the gill stove with some peculiarities; the gills are corrugated so as to increase the heating surface, and internally project into the fire so as to pick up as much heat as possible, and they are grooved together so as to leave no possible direct outlet for the heat from the fire. The heating efficiency of this stove, in proportion to the cost of fuel, appears very high. Both are for slow-burning coal.

MR. BRETT ON DECORATION.

THE following is extracted from the paper, to which we have already referred, on "The Relation of the Pictorial to the Decorative Arts," read by Mr. John Brett at the Liverpool Art Congress:—

"Whilst it is the function of the artist to exalt natural images and to fix on canvas those that are fleeting and evanescent, it is the business of the decorator to take only such elements of them as can be harmoniously interwoven with the rigid forms of the structures to which they are applied without crippling their usefulness.

Now, the usefulness of the walls of a house, beside and beyond the rudimentary one of keeping the wind away, is to minister to the intelligence and taste of the dwellers therein. Inasmuch as the walls are perpendicular, they confront the spectator whichever way he turns, and are most favourably placed for being looked at; so that, if you possess any specially beautiful image, common sense dictates that it should not be painted on the ceiling, because your eyes are not conveniently situated for seeing it there. Neither would you place it on the floor, because you want the floor to walk upon, and for other practical purposes. The walls, therefore, are the necessary source of your intellectual entertainment, the home of your pictures and your books; and it is well known to cultivated people that no room can be attractive without pictures or books. It is true that it can be made comfortable by means of cabinet work, or wood-panelling, or upholstery, as in the cabin of a yacht; but this treatment violates one fundamental condition of good decoration, for it interferes with the usefulness of the walls, inasmuch as the intellectual entertainment to be got out of panels is not considerable. They have the advantage over plaster or whitewash, being of a pleasanter colour, and not so chilly to the touch.

Panels, of course, might be filled in with poetical or historical pictures or with views of the Himalayas; but there is a practical objection to this, viz.,—that portability is a valuable attribute of pictures, and that their shapes are necessarily dictated by the subjects you choose, whereas panels are permanent parts of the house, and their size and shape are not variable. The conclusion I arrive at, therefore, is, that walls should only be panelled below the line of sight, where pictures would be in danger and impede the free occupation of the room.

I do not refer to tapestry as a method of decorating walls, because, being portable, it may be considered as a form of pictorial art. The object of all these forms of decoration is to relieve the inmates from the distressing monotony of the blank wall enclosing them, the said blank wall being suggestive of a curtailment of one's liberty, and very consonant with the sentiment of a prison. The great desideratum is to vary the colouring of the wall, and for this purpose the area must be divided up, so as to provide for different intervals of colour in varied quantities.

This leads me to the practical inference that internal walls are best treated by what is known to architects as Diaper, which they sometimes pervert from its true use, that of a setting for colour, and carve in stone, as at the Law Courts. This I call illegitimate sculpture, because, being handwork, no more expense or trouble would be incurred in carving fine organic forms than mere geometrical ones frequently repeated. Diaper is quite harmless, if it be not obtrusively painted, on internal walls.

The true function of the floor is to be walked on. The function of the ceiling is to reflect light. The function of the wall is to serve as a background or setting for your guests and your pictures. In order to see these to advantage the background should be subdued in colour, so as not to intrude itself on your notice; also it is important that the upper part of it, or frieze, should be kept as light in colour as possible, so as to reflect light to the opposite wall. Nothing is more fatal to the usefulness or pleasantness of a room than a dark ceiling. Reflected light is necessary to enable us to see into the shades of objects, and if the light which enters by the window is not reflected by a bright ceiling and frieze, the shades on the faces of the people, as on all other objects, will appear black. In my opinion, white is the proper colour for a ceiling.

In modern times, when poverty and ignorance have walked hand-in-hand, an effort has been made by our manufacturers to provide the world with cheap art wherewith to cover its walls; but a moment's consideration will convince any one that art and cheapness are incompatible, since the faculty to produce art is comparatively rare, and rare things are choice, not cheap.

It is true that in early times a great deal of art of the utmost value was done for nothing, or at least not paid for in coin of the realm: the notes then current, viz., promises to pay in a future state, were deemed more than equivalent. These works were done in endowed monasteries by artists who neither had nor wanted any property of their own. The finest hand decoration in the world was done by them on manuscripts. It is probable that equally good work could be done now, but it would have to be paid for as it was then, and, therefore, is wholly outside the region of practical commerce. We have no parallel institutions now, and our artists are glad to conspire with the manufacturers in the effort to provide cheap art for the masses; and it is now for me to show that, although they have had in one sense a tremendous success, inasmuch as they may be said to have covered every room in England, of rich and poor alike, with their wall decorations, their work in its present condition is rather a curse than a blessing; that its tendency is rather towards the degradation than the exaltation of taste, and leads to intellectual torpor.

Let me point out, first, that unity is one of the fundamental principles of all art. It has always been recognised as such. By artistic unity I mean that each of the parts of a design shall be necessary to the other parts, and that none shall be redundant. Two hands, for instance, are necessary to the completion of the figure of a man, but two right hands would be redundant. In a society composed of men and women of different capacities and different ages, each has a special function in supplementing the deficiencies of the others; but if all were made exactly alike or turned out in similar groups, human life in any high sense would be impossible—at all events, its graces and beauties would disappear.

You see, therefore, that artistic unity, a fundamental principle of good design, cannot be had in stamped or printed ornament, for its members must inevitably be repeated many times in one field of view. Now human sensibilities are capable of being quickened and developed, or, on the other hand, of being dulled and debased by what you offer for their contemplation. A series of ideas, or of forms, or of intervals of colour such as constitutes an artistic design, may be entirely delightful, but its frequent repetition without any relief will first weary, next disgust, and finally dull your sensibility and destroy your capacity for enjoyment of that kind. The effect in the first case is exalting, in the last depressing. Whatever quickens is good; whatever deadens is bad.

The walls of my own picture-gallery were decorated by one of the most esteemed London firms. The chief feature is a rose set in the undulations of a foliated pattern. The same rose appears about 500 times. Even if it were well drawn, and if your sensibilities remained awake enough to recognise the resemblance to nature, the effect would be to make you hate the smell of roses for the rest of your life. To familiarise the eye with the gross violations of vegetable physiology which are inevitable in a foliated pattern is, as I said before, to promote intellectual torpor; instead of being roused to indignation you sink into indifference. The result is that I take a vindictive pleasure in driving nails into the roses to hang pictures by, and am glad to obliterate the decoration.

The reiteration of the shaft in a colonnade is not a case in point, because the shaft is a constructional, not a decorative, member, and its multiplication confirms the sense of security of the structure.

In those cases where a work of fine art is adapted to perfect reproduction by casting, let us say, sculpture, or engraved plates which can be reprinted indefinitely, its intrinsic value and its artistic importance are in no degree diminished by repetition, as each copy is isolated. Five hundred prints of the Raising of Lazarus are not usually hung in one room. If every town in England possessed a cast of the Theseus of Phidias the intrinsic value of that incomparable work would remain the same as it is now.

I do not despise decorative art produced in factories because it is cheap, but I broadly affirm, as a general principle, that it is not only valueless, but, strictly speaking, vicious; that to say, its tendency is to dull the people's sensi-

bilities rather than to exalt them, and that I believe to be the correct definition of vice.

There is one other thing that I wish to state emphatically, viz., that good decorative art is not any nearer within the reach of the masses or the poor, or moderately poor, working people than is good fine art, for the cheap processes of the factory cannot produce it. In the nature of things there is no prospect of their ever doing so; for the tendency of that scientific culture, which is the peculiar distinction and most notable characteristic of the present era, is a current setting in the opposite direction, viz., in the direction of pure realism.

The further we advance in the knowledge of Nature's laws, the more keenly alive do we become to the importance of her forms, and the more are we offended by any distortion of them. To any one acquainted, for instance, with human anatomy, what could be more offensive than an ill-drawn limb? So deeply felt is such offence, that it hinders many men from appreciating the fine sentiment that underlies the archaic drawing of the early masters. A person who is completely ignorant of anatomy or physiology may yet fully appreciate Fra Angelico or Benozzo Gozzoli, but it will not be contended that such gratification compensates for the ignorance.

In the same way, the rude patches of white and blue that stand for clouds in old tapestry appear so childish to any one conversant with the habits of the real clouds and their beauty, that he feels hurt, and his mind is unbalanced and unfitted to do justice to the true merits or the sentiment of the old designer. In the days when tapestry of this kind was magnificently done, I suppose no one knew any more about clouds than about ghosts, or about the structure of the solar system, or about the nebular hypothesis; so that no distortion gave any offence. But such an untrodden field of innocence is now irrecoverable. The shadow on the dial cannot go backwards, and archaic design cannot now be revived. It can survive only as an evidence of affectation or the mask of incompetence."

THE ARCHITECTURAL ASSOCIATION.

THE fifth meeting of this Association for the present session was held on the 14th inst., in the meeting-room of the Royal Institute of British Architects, Mr. Herbert D. Appleton (President) in the chair.

The following new members were elected, viz., Messrs. A. Campbell, A. G. Wyand, D. M. Litster, J. K. Hunter, J. C. Jackson, G. A. Luden, and A. W. Earle.

The President called attention to the valuable studentship of 15*l*., offered to the Association by Mr. Arthur Cates, to enable a student to visit Paris and study the coming International Exhibition, both as to the construction of the Exhibition building, and the manufacturing and architectural exhibits. The details of the studentship were not yet finally settled, but would be ready in a few weeks. He felt sure the members would wish the Committee to convey to Mr. Cates the thanks of the meeting for his very valuable offer (applause).

The President said he regretted that the Committee were not in a position to bring the affiliation of the Birmingham and Glasgow associations before the meeting, and he must ask leave to adjourn the matter to the next occasion.

Mr. W. J. H. Leverton said that before the by-laws were brought forward, they should be properly considered, and he hoped they would be printed in the January number of the *A. A. Notes*, or in the form of a printed slip issued with the *Notes*.

The Chairman asked Mr. Leverton to make his suggestion to the Committee, who would, no doubt, consider the matter.

Mr. W. Doubleday then read a voluminous and interesting paper on "Symbolism." The author promised us a *résumé* of it, but as it has not reached us we cannot publish it this week. Next week we hope to give it, together with some notes of the discussion which followed.

On Saturday, the 15th inst., the Class of Construction paid a visit to the engineering laboratory at University College, Gower-street, W.C. The members were received by Prof. Kennedy, and a number of very interesting experiments were performed, including testing the tensile strength of wrought-iron bars and plates of varying thicknesses, steel plates, and Portland cement bricquettes; and the compressive strength of various specimens of wood, including mahogany, pitch-pine, oak, yellow pine, deal, &c. An exceedingly sensitive and beautiful piece of mechanism was shown by the inventor, Mr. Ascroft, by means of which a graphical representation of the gradual extension and ultimate fracture of a piece of bar steel was automatically traced on a piece of smoked glass. The experiments were rendered doubly interesting by the clear and lucid explanations of Prof. Kennedy. At the conclusion of the visit, a very hearty vote of thanks was given to the Professor for his kindness in taking so much trouble in preparing the many instructive experiments which were performed. Prof. Kennedy expressed the great pleasure which it gave him to do anything for the Association, and after an additional vote of thanks had been given to the Professor's able assistant, Mr. Ascroft, the visitors departed.

NEW GERMAN STANDARD RULES FOR PORTLAND CEMENT TESTS.

THE Proceedings of the Institution of Civil Engineers, in the recently-issued volume (vol. xci.), give the new German standard rules, as issued by the Prussian Minister of Public Works, for the testing of Portland cement. The first rules were published by the Public Works Department in 1878, and, as most of our readers are doubtless aware, were adopted by most of the Architectural and Engineering Associations in Germany, and they have since served as a basis for standard rules in other countries. In the course of ten years' work, however, it has been found desirable to make certain important modifications, and the Association of German Cement Manufacturers accordingly applied to the Minister, with the result that a good many alterations have been made, from which the following are taken:—

The time of setting of a slow-setting cement is now fixed at two hours, instead of half-an-hour.

In testing for expansion, the cake of cement is allowed to set for twenty-four hours before immersing in water, during which period it is kept moist, and in the shade.

The cement must be ground so finely that not more than 10 per cent. residue remains upon a sieve of 900 meshes per square centimètre (5,806 meshes per square inch), and made of wire the thickness of which is one half the width of the mesh. One hundred grains (0·22 lb.) of the cement is to be used for each test.

The strength is ascertained by tensile and compressive tests; the cement in both cases being mixed with three times its weight of sand of a definite size of grain.

The breaking area of the tensile briquettes is five square centimètres (0·775 square inch), and the compression tests are made with cubes of 50 square centimètres (7·75 square inches). Tests with neat cement are to be preferred where Portland cement is being compared with other hydraulic cements. In order to secure uniformity it is recommended to use similar apparatus to that in use in the Royal Testing Establishment at Charlottenburg.

The minimum tensile strength of a mixture of one part by weight of slow-setting cement, mixed with three parts by weight of standard sand, after hardening one day in the air and twenty-seven days under water, is 16 kilogrammes per square centimètre (227·5 lb. per square inch). The crushing strength is 160 kilograms per square centimètre (2,275·6 lb. per square inch).

In giving the strength of Portland cement, the time of setting should always be mentioned, the strength of quick-setting cements being lower than that of slow-setting cements. The final test of strength is the crushing test in twenty-eight days, the twenty-eight days' tensile test being used for ascertaining the quality of cement as delivered. The seven-day test may be used for the latter purpose if the ratio of the seven days' strength to that at twenty-eight days has been previously determined for the cement under examination. This preliminary test may also be carried out with neat cement, in which case the strength of the same cement neat at twenty-eight days must be known. The standard sand is obtained by sifting clean quartz sand first through a sieve of 60 mètres per square centimètre (387 meshes per square inch) made of wire 0·38 millimètre (0·0146 in.) diameter, then through a sieve of 120 meshes per square centimètre (774 meshes per square inch) made of wire 0·32 millimètre (0·0123 in.) diameter. The sand which remains upon the finer sieve is that which is to be used for the tests.

For each series of tests ten briquettes at least must be broken, the average of the ten numbers obtained being taken as the strength of the cement. In making each five briquettes for the tensile test, 250 grains (0·55 lb.) of cement is mixed with 750 grains (1·65 lb.) of standard sand, and 100 grains (0·22 lb.) of fresh water, the whole mass being well mixed for five minutes. The mortar is beaten into the moulds for one minute with a spatula weighing about ½ lb. until water begins to rise; when the surface has been smoothed with a knife the mould is carefully removed, and the briquette placed in a covered zinc-lined box for twenty-four hours. It is then immersed in water for the remainder of the hardening period. In making these briquettes by machinery, Dr. Böherne's apparatus is used, and for crushing tests Dr. Böherne's machine is prescribed. In giving the results obtained, the proportion of water used must be stated.

All briquettes must be tested immediately they are removed from the water. In breaking the tensile briquettes the weight must be added at the rate of 100 grains (0·22 lb.) per second.

THE LYRIC THEATRE.

THIS, the latest of the London theatres, has been built for Mr. H. J. Leslie, on a site in Shaftesbury-avenue, from the designs of Mr. C. J. Phipps, F.S.A., Messrs. Stephens & Bastow being the builders. The work was commenced on February 9 last.

The façade of the theatre is in the Renaissance style, and is built of red brick and Portland stone. It is divided into a centre and two wings, each surmounted by a high-pitched gable, with recessed arcades on the third floor. The building occupies a space of 150 ft. long, on the west side of Shaftesbury-avenue, at a distance of about fifty yards from Piccadilly-circus. It stands almost isolated, having entrances into Archer-street and Windmill-street, as well as those into Shaftesbury-avenue, which give access and egress to the public by ten doorways, and to the artistes and others engaged on the stage by two.

The entrances set aside for the exclusive use of the Private Boxes, Orchestra, and Balcony Stalls, consist of three doors in the upper end of the façade, and the large doorway in the centre of the building. The entrance to the Upper Circle is next to the central Stall entrance, but the two entrances for the Pit and Gallery are in Archer-street, although they are duplicated by exits for those portions of the house in Shaftesbury-avenue. There is a separate Royal entrance in Shaftesbury-avenue, by a doorway which adjoins the central entrance to the Stalls. It opens into a vestibule which leads to a small Salon, and thence to the Royal Box, which is on the Grand Tier on the left side of the Proscenium, and practically on the level of the street. The following dimensions will give an idea of the size of the interior of the Lyric Theatre:—

	ft.	in.
From Curtain to Front of Balcony, First Tier	38	0
" " Upper Circle, Second Tier	44	0
" " Gallery, Third Tier	48	0
" " Back of Pit	60	0
Width of Proscenium opening	30	0
Height " "	27	0
Height from Pit Floor to Ceiling of Auditorium	43	6
Curtain to Back Wall of Stage	40	0
Width of Stage between walls	70	0
Height from Stage to Gridiron	56	0

These dimensions have enabled the architect to find accommodation for nearly 1,600 persons. In addition to the twelve Private Boxes there are

The Orchestra Stalls, with	7	Rows, to hold	150	persons.
The Pit	"	13	"	"	300	"
The Balcony	"	8	"	"	163	"
The Upper Circle	"	7	"	"	230	"
The Gallery	"	12	"	"	700	"

It is claimed that every one of these persons can easily see the Stage.

The scheme of the Auditorium, which is of three tiers, is as follows:—The Proscenium has on either side three tiers of Private Boxes, enclosed by two massive white marble columns, richly fluted and gilded. Over these, above the cornice, springs an arch, the width of the private boxes. Seven rows of Orchestra Stalls, and thirteen rows of Pit, occupy the ground floor of the theatre. In addition to the Private Boxes already mentioned, the first tier is occupied by eight Private Boxes, four on either side, and eight rows of Balcony Stalls. The Upper

Circle occupies the second tier with seven rows, and the twelve rows of the Gallery occupy the third tier.

A Vestibule and large "Foyer" behind an enclosing corridor, 6 ft. wide, are provided for visitors to the Stalls and Balcony Stalls, the latter being on a level with the street. Right and left of the main corridor are stairs leading down to the Stalls. On the first floor, in rear of the Upper Circle corridor, is the Grand Hall, 30 ft. long, 16 ft. wide, and 18 ft. high, which is intended as a lounge and refreshment-room, but which is specially adapted for concerts and entertainments on a small scale, when performances are not going on in the theatre. Arrangements have also been made by the proprietor for the supply of refreshments to the occupants of the Pit and Gallery, for whose accommodation bars, and refreshment and smoking rooms, are provided.

The scheme of colour of the auditorium is pale lemon, white, and gold, relieved with pale grey-blue. The hangings are gold and coral brocatelle. The seats are covered with Genoa velvet, carrying out the blue tone introduced into the decorations. The walls of the Dress Circle, Private Boxes, Second Circle, and Staircase, are covered with a gold-stamped leather paper. The frame of the Proscenium is of a brown and white alabaster, and the sides of the Stalls and Pit are lined with panelled walnut and sycamore, with carved mouldings, specially designed and manufactured in Germany.

The Grand Hall in the Second Circle is early French Renaissance of the Henry II. period, with geometrically ribbed ceiling and cornice, tapestried walls, panelled dado, doors, and fireplace. The colour is a turquoise-blue and green. The windows are filled with leaded glass, and the hangings are of silk brocatelle: the floor being an oak parquét, with an inlaid border of various woods.

The Vestibule, Crush Room, Stall Entrance, and passages outside the auditorium are decorated in Pompeian style; the Entrance Hall being red, the Crush Room blue, with tapestry hangings, and the Dress Circle corridor light in colour, with a cinnamon and golden dado.

The Royal Room is panelled on walls and ceiling with wood mouldings, and carton-pierre in the Adams' style, the colours being blue, white, and platinum. The walls have Venetian mirrors in the centre of panels. The furniture is of mahogany, enamelled and decorated, the settees and chairs being covered with silk damask. The draperies and curtains are lemon colour.

The Stall Foyer and Smoking Room is an imitation of an early Dutch interior—the ceiling being supported by heavy beams, with panels in pitch-pine and plaster decorations. The high dado is entirely copper bronze, the upper part of the wall being covered with a very rich leather. The mantel is stone, surmounted by a heavy over-mantel, containing two old Dutch portraits.

The Iron Curtain dividing the Stage from the Auditorium has been painted by Mr. E. G. Banks, the painting representing the Old Iron Gates leading to the Avenue of Chestnuts at Bushey Park. The Drop Scene is from the brush of Mr. W. Telbin.

It has been decided to light the Theatre exclusively by electric light, and to have no gas at all in the building. The light is generated by machinery in adjacent premises belonging to the proprietor, and the electric current is conveyed to, and stored in, accumulators. The entire installation has been carried out under the direction of M. Emil Sechehaye, the Electrical Engineer of the Grand Opera and Hof-Burg Theatres, Vienna. The electroliers have been supplied by Messrs. Benham & Froud, Limited, Messrs. Shoolbred & Co., and Messrs. Hess, Wolff, & Co., of Vienna. The whole of the Stage Electric Lighting arrangements are the patents of M. Sechehaye—all the fittings having been manufactured in Vienna.

A large organ for the stage is in course of construction; the manuals will be placed in the orchestra, and connected with the organ by pneumatic tubes.

The sanitary arrangements are described as being on an unusually complete scale, especial care having been taken to provide ample convenience in every part of the house. Lavatories, with hot and cold water supplies, are placed in the cloak-rooms; and in the Stall lavatory, provided for gentlemen, a dressing and bath room has been arranged for the convenience of visitors desiring to dress at the theatre. Especial regard has been paid to ventilation, and the whole of the buildings are heated by hot water.

The following contractors have been engaged on the works:—Messrs. Stephens & Bastow, builders; Messrs. Morland & Son for the iron-work; Messrs. Jackson & Son for the plaster ornamentation; Messrs. Campbell Smith & Co. for the whole of the decorations of the theatre, and the designs for the large foyers; Mr. R. Davison for the marble proscenium and mosaic floors throughout the theatre; Messrs. Clark, Bunnett, & Co. for the iron protected curtain, and hydraulic motors and machinery for the stage; Messrs. Merryweather & Sons for the fire hydrants; Mr. F. Beer for the hot-water apparatus and speaking-tubes; Messrs. Shoolbred for the furniture, seating, upholstery and drapery, and electric wiring, also the wood panelling in the stalls; Mr. Rhodes for the stage; the Electrical Power Storage Company for the accumulators; Messrs. J. G. Statter & Co. for the dynamos; Messrs. J. H. Andrews & Co., Stockport, for the engines; the Edison and Swan Lamp Company for lamps; Messrs. Woodhouse & Rawson for lamps and electric appliances; Messrs. E. L. Berry & Co. for the electric bells.

COMPETITIONS.

"*The Hydro*," *Buxton*.—As stated last week, the first premium was awarded to Mr. Dawes, Messrs. W. Sugden & Son obtained the second, and Mr. G. Statham, Matlock and Nottingham, the third. It is expected the first-named design will be carried out with modifications. In all, twenty-two sets of plans were sent in.

Thomas Walker Convalescent Hospital, near Sydney. — We learn from the *Australasian Builder and Contractors' News* that by the will of the late Thomas Walker, of Yaralla, Concord, N.S.W., the sum of 100,000*l*. was bequeathed for the erection and maintenance of a hospital for convalescents, and a peninsula of about 30 acres in extent, at Rocky Point, on the Sydney side of the Parramatta River and near Ryde township, was included in the bequest. The trustees decided to obtain competitive designs for laying out and erecting the proposed institution, and offered three premiums of 250*l*., 150*l*., and 100*l*. respectively. The adjudicators were Mr. Thomas Buckland, Mr. T. Rowe (nominated by the Institute of Architects of N.S.W.) and Dr. McKellar (nominated by Messrs. Buckland and Rowe). Designs were invited in March last, and the latest date for sending them in was advertised to be July 31, up to which latter date twenty-one sets of drawings had been received, some coming from New Zealand and some from Tasmania, and two sets were not delivered by the time specified in the conditions. The first premium has been awarded to the design bearing the motto "Pro Opere Benefico," by Mr. J. Kirkpatrick, of Pitt-street, Sydney. The second premium went to the design bearing the motto "Comfort," by Mr. James Barnet, jun., of Castlereagh-street, Sydney. The third premium was adjudged to the design bearing the motto "Hospice," by Messrs. Wilshire & Shaw, Castlereagh-street, Sydney.

ARCHITECTURAL SOCIETIES.

Manchester Architectural Association.—At the fourth ordinary meeting of this Association, held on Tuesday, at the Diocesan Buildings, Mr. A. H. Davies Colley, A.R.I.B.A., the President, in the chair, a discussion was opened by Mr. H. B. Bare, F.R.I.B.A., upon "Architects and Handicraftsmen." The foundation of a Chair of Architecture and the allied arts, such as sculpture and decorative painting, was suggested as very desirable at Owens College, Manchester, and other colleges of the Victoria University. The professor would direct a course of mental and manual art-work for those who afterwards might adopt any of the special branches of artistic professions or handicrafts. The result would be a sounder and wider education in arts, and a greater sympathy between all professions and all handicrafts, which must before long improve art of every kind. Messrs. Hodgson, Mould, Stelfox, Mee, and the chairman, took part in the discussion which followed.

The Sheffield Society of Architects and Surveyors.—An interesting lecture was delivered at the monthly meeting of this Society on the 11th inst., by Mr. H. W. Brewer, of London, on "The Smaller Mediæval Municipal Buildings of Central Germany." Mr. Flockton (the President) presided, and there was a large attendance of members, including Messrs. C. J. Innocent, J. B. Mitchell-Withers, C. Hadfield, E. M. Gibbs, W. F. Hemsoll, W. C. Fenton, H. W. Lockwood, W. H. Lancashire, C. F. Wyke, and others. The lecture was illustrated by a fine collection of unique pencil and water-colour drawings, over sixty in number, made by Mr. Brewer on the spot at different times; and these are enhanced in value from the fact of the disappearance of some of the buildings during the past few years through the rage for modern improvement. Mr. Brewer explained the origin and marvellous development of municipal institutions in Germany and the Low Countries during the middle ages. They suited the character and genius of the people, and were especially vigorous in the free towns, and those under the sway of the Prince-Bishops. Municipal life and character flourished throughout the German Fatherland at that period to an extent unknown elsewhere,—and in its free and bracing atmosphere, architecture and all the arts and crafts flourished. The lecturer proceeded to describe in detail the interesting Rathhauses or Municipal Halls of Würzburg, Münster, Hildesheim, Ratisbon, and Prague; and those of a smaller and less known type, such as Rothenburg and Dettlebach. Referring to the latter, he pointed it out as an example of the ingenuity and inventiveness of the old architects, who generally turned difficulties to advantage. This building, so to speak, stood on no ground at all, being partly over a street and a river, and there were many such examples of the utilisation of difficult town sites which were invaluable to the architect of to-day. He alluded to the interesting Rathhaus of Ochsenfurth, where the Council Chamber has the original tables and furniture of carved pine wood, and a unique bronze pint or measure now in daily use, and dating from the fourteenth century. The President passed a high encomium on Mr. Brewer's drawings and research, and called upon Mr. C. Hadfield, who, in moving a vote of thanks, remarked that Mr. Brewer's drawings had the graceful touch, feeling, and accuracy of a Prout, and evidenced that the labours and researches of the lecturer had been a labour of love. The important question of new municipal buildings in Sheffield was within measurable distance, and he had every confidence that the municipal life and character of the town to-day would be able to produce happy results if only the work was undertaken in the common-sense, practical, and artistic spirit that characterised the buildings of the old German burghers. Mr. Hemsoll seconded, and a hearty vote of thanks was awarded to Mr. Brewer for his interesting paper. As we need hardly remind our readers, many of the buildings mentioned by Mr. Brewer in his paper have been illustrated in the *Builder* from his drawings.

Edinburgh Architectural Association.—The usual fortnightly meeting of this Association was held on the 13th inst., in the Architectural Hall, 42, George-street, Professor G. Baldwin Brown in the chair. After the usual preliminary business was disposed of, Mr. Archibald C. Elliott, D.Sc., assistant to the Professor of Engineering in the Edinburgh University, read a paper on "Recent Departures on Electrical Engineering." The subject of artificial lighting, he remarked, belonged to the utilitarian rather than to the artistic side of the architect's business, and in his vocabulary was one of a set of three—lighting, warming, and ventilating—none of which had, unfortunately, hitherto received from him all the attention which was justly its due. Restricting the scope of the paper to the recently developed systems of distribution at high pressure from main generating stations, Dr. Elliott hastily glanced at the history of the subject, which, he stated, might be said to commence with the lighting in 1884 of several of the stations on the Metropolitan Railway by the system of Messrs. Gaulard & Gibbs. Until then engineers had thought that there was no help for it but to let from 50 to 75 per cent of the prime cost of an installation be sunk in copper mains; but on the new system the electrical energy was transmitted through comparatively light mains at enormous pressure—from 1,000 to 10,000 volts—and, by means of "transformers," placed at convenient points, was delivered to householders at the quite harmless but useful pressure of 50 to 100 volts. Dr. Elliott then showed how, in the modern transformer, the usually intractable property of self-induction turned itself to good account, and was the means of rendering the apparatus almost perfectly self-regulating. The

efficiency of a transformer was rather difficult to measure; and that in some degree accounted for the distrust with which it was at one time regarded. The theory had, however, all along pointed to a high efficiency; and it might now be said with safety that the efficiency of a good transformer at full load was considerably over 90 per cent. In order to show the great advance which had been made, he had calculated the cost of a distributing main for 5,000 lamps, extending, say, from some distance west of St. Mary's Cathedral to somewhere beyond St. Andrew-square, to be, on the old parallel system, 14,000*l.*; on the three-wire system, 10,500*l.*; and on the new high-pressure transformer system, 4,200*l.*; and, in addition to the saving in cost, the transformer system, he pointed out, had the advantage of a much more constant pressure in the mains. Mr. Ferranti, the engineer to the London Electric Supply Corporation, whose company at present worked the Grosvenor Gallery installation, had decided to use in the new Deptford installation,—which would be, without exception, the largest in the world,—no less a pressure than 10,000 volts. The expansion would be carried out in two stages,—first, from 10,000 to 2,400 volts, and then from 2,400 down to 100 volts in the consumers' mains. On the advice of Sir William Thomson, Mr. Ferranti was going to use for the 10,000 volts mains a conductor of two concentric hollow copper tubes, separated by an insulating compound. The outer tube would be at the potential of the earth, so that although the main might be transmitting energy at the rate of 5,000 horse-power, it might be touched with impunity. Mr. Heaviside had shown that the copper near the axis of a conductor carrying alternating current was, owing to self-induction, much less effective than the outer part; and it would be interesting to see how far this conclusion was borne out practically at Deptford. Through the kindness of Mr. Ferranti, an actual 2,400 volt transformer and some other apparatus for the Deptford installation were exhibited to the meeting. At the close of his lecture, a hearty vote of thanks was accorded Dr. Elliott for his paper.

OBITUARY.

Mr. Richard Redgrave, R.A. (retired), died on the 14th inst. at his residence, Kensington, after a short illness. According to "Men of the Time," he was born in Pimlico, April 30, 1804, and during his early youth he was employed under his father, William Redgrave, a manufacturer, who, says the *Times*, was working with Bramah, the inventor of the hydraulic press. Richard was employed in designing and in the drawing of specification work, and this employment seems to have acted upon his whole life. He had long supplemented his business work with sketching from nature, and when he, at the age of 21, entered the Royal Academy as a student, he supported himself by giving instruction in landscape drawing. Maclise was one of his contemporaries during his student life, and in a contest for the gold medal, Maclise was successful against Redgrave. For the next ten years very little is heard of him; but about the year 1836 he exhibited his first well-known work, "Gulliver on the Farmer's Table," at the British Institution. It was not till 1838 that a picture of his was hung on the line at the Academy, and it is stated the work—an illustration from one of Crabbe's poems—had been already rejected by the Institution. The picture was immediately sold, and from this time his success was assured. In 1839 he again exhibited at the Academy, and in 1840 he was elected an Associate. For several years he was a constant contributor to the annual collection at the Academy, and he by no means confined himself to landscape; and in 1851, when he produced his "Flight into Egypt," he was elected R.A. It was about this time that, with the help of Mr. H. Cole (afterwards Sir Henry Cole, K.C.B.), he formed the museum of ornamental art at Marlborough House, the nucleus of the present Musem of Art at South Kensington. Both the fellow-workers rendered service to the nation in the carrying out of the scheme of the Great Exhibition in 1851. Cole was one of the executive committee, while Redgrave was named one of the jurors in the Fine Art Section, and he further wrote a report on design applied to manufacture as shown in the exhibition. In 1855 the two were again employed together in representing Great Britain at the Paris Universal Exhibition. Cole was British Commissioner; to Redgrave were intrusted the arrangements of the British Art Section, and here he drew up a report similar to the former one. For his services in this connexion Redgrave gained the Cross of the Legion of Honour. In 1858 the Queen appointed him Surveyor of Crown Pictures, and for many years he was engaged in preparing a catalogue of all pictures belonging to the Crown. In 1866 he joined his brother Samuel (who died in 1876) in preparing a history of British art from the time of Hogarth, under the title of "A Century of Painters." For many years he kept up his connexion with South Kensington, where he took the chief part in forming an historical collection of water-colours for the Museum. In 1880 he resigned both his appointment as Surveyor and Keeper of the Royal Pictures, and also his post in the Department of Science and Art at South Kensington, and from that time he seems to have painted but little. The funeral took place on Wednesday last at Brompton Cemetery.

Mr. H. J. Paull.—The death was announced, at the meeting of the Institute on Monday, of Mr. Henry John Paull, F.R.I.B.A., of the firm of Paull & Bonella, and formerly of Manchester. He was elected a Fellow of the Institute in 1867.

WIDTH OF ROAD BORDERING A COMMON:

A CURIOUS POINT RAISED.

At the Woolwich Police Court, Mr. C. H. Congden, of No. 10, The Pavement, Lower-road, Charlton, builder, was summoned by the Metropolitan Board of Works for continuing penalties for not making a road leading out of the Chesnut-road, Plumstead, of the statutory width of 40 ft., contrary to 25 & 26 Vic., c. 102, Vic. 98, and By-law.

Mr. Burton, solicitor, appeared for the Board, and Mr. Besley for the defendant.

The facts were as follows:—The defendant built twelve houses in a way only 27 ft. wide, leading out of the Chesnut-road, and to give the statutory width it would be necessary to take in 13 ft. of Plumstead Common.

Mr. Besley, in defence, stated that the road was amply sufficient with its present width, as no houses could be built upon the other side, and called Col. Hughes, M.P., and Mr. Talfourd Hughes in support of this view.

Mr. Fenwick, the magistrate, stated that he found the way was a "new street," and subject to the provisions of the Act of Parliament and By-law, and he fined the defendant 10s. and 2s. costs.

QUANTITIES AND SURVEYORS.

SIR,—In your issue of the 1st inst., you inserted an important paper read at a meeting of the Institute of Builders (at which I was present as a visitor), but no report was given of the interesting discussion which followed.*

As this paper was, in the main, depreciatory of the status and capabilities of quantity surveyors, and has, hitherto, received no answer, I will ask you to insert this letter as a protest against, and a correction of, several statements made at the meeting.

1. It was asserted that no body existed to represent or guarantee the respectability and competence of surveyors. This remark must have been made in ignorance of the existence of the Surveyors' Institution, to which most surveyors of standing belong, and which has an entrance examination, with a special division for the mensuration of building work. This provides for the professional training of its Associates. Membership also guarantees respectability in various ways. Candidates have to be proposed and seconded by six Fellows and Associates, the applications being afterwards considered by the Council, and then voted on by a general meeting. Although cases of black-balling are not numerous, they are sufficient to prove the existence of the safeguard, and their scarcity is owing probably to the fact that undesirable persons are discreet enough not to court a defeat.

2. The author of the paper, and several speakers at this meeting, brought instances of ridiculously inadequate bills of quantities, both in description and dimensions, thereby inferring a general charge of incompetency against surveyors.

Such exceptional cases can be found, if searched for, in every trade and profession. The only protest against the general tone of depreciation was made by Mr. Chappell, the contractor, who was fair enough to admit that on the whole, builders have reason to be thankful to the skilful and honourable body of London surveyors.

3. As to the repeated assertions of exorbitant charges of 2½ and even 5 per cent., these cases must be rare in London, and the more usual commissions of 1½, 1¼, and the frequently inadequate charge of 1 per cent. or less, was not set off against the instances of excess.

No notice was taken, either, of what I believe is the fact, that these excessive fees are generally charged in the unusual case of architects who take out their own quantities, and repudiate any responsibility.

No practical remedy was proposed for getting over the difficulties created by the late legal decisions on the liability for errors and payment of quantity surveyors, which, as I supposed, the meeting was called to discuss.

This question, however, is now about to come under the consideration of a joint committee of members of the Surveyors' Institution and the Institute of Builders, and may safely be left in their hands.

Builders are naturally disturbed at the decision in Priestley *v.* Stone, but insinuations are sometimes unjustly made that by this case surveyors have endeavoured to evade their responsibilities for errors, which, on the contrary, they have always acknowledged and frequently paid for. The abstract justice of this liability I do not intend to discuss now, but the defence went on different lines altogether, and does not justify such unfair inuendos.

Another question also in the present state of uncertainty is, do such insinuations tend to the advantage of any one concerned?

SIDNEY VIGERS.

18, *Abingdon-street, Westminster*,
Dec. 17, 1888.

* We have not space, of course, to report all the papers and discussions that take place.

UPHOLLAND CHURCH.

SIR,—In the last number of your journal (p. 434) the church of Upholland is spoken of as "probably the only church in England dedicated to St. Thomas à Becket." This is very far from being the case. The dedication to St. Thomas of Canterbury, popularly known as St. Thomas à Becket,—let me say, by the way, that the archbishop's true name was simply Thomas Becket; there is no authority for the intrusive *a*,—is not so very infrequent in England. There are no fewer than sixty-four churches bearing his name—nineteen more than are dedicated to his namesake, St. Thomas-the-Apostle, who only has forty-five. Of these, seven are in the county of Lincoln, while in his own county of Kent there are only two dedications to the martyred archbishop. At Lincoln, the chapel on the High Bridge, long since destroyed, was dedicated to St. Thomas of Canterbury, as was the far larger and more stately chapel on London Bridge. After the canonisation of St. Thomas, it became the fashion to call freshly-founded churches after the new saint. I may instance the churches of Portsmouth, and of Newport, in the Isle of Wight. In other cases the dedication was altered to suit the reigning fashion, the name of St. Thomas being either substituted for the former dedication, or associated with it. At Bridlington, in Yorkshire, the monastic church was dedicated to St. Mary, while the parish church, which formed part of it, was called after St. Thomas. At Newton Valence, in Hampshire, we also have the same two saints associated.

EDMUND VENABLES.

*** The statement was made on the authority of Mr. Champneys, the architect for the additions to the Church, who, we presumed, had some grounds for it, as he had recently been practically interested in a church dedicated to Becket.

WARMING OF VILLAGE CHURCHES.

SIR,—Referring to the letter of your correspondent, signed "Engineer," in your issue of the 15th inst., my name is mentioned in such a way as to be calculated to lead the uninitiated to consider my patent warm-air system of heating buildings to be less safe and healthy than his low-pressure system. Perhaps "Engineer" is not aware that I make low-pressure apparatus, but, for a lofty or very spacious building, I not only do not recommend it, but utterly repudiate it. A life's experience on matters pertaining to the heating of buildings has convinced me that to raise the temperature of a building that is lofty to 55 deg. Fahr. in frosty weather, innumerable pipes would have to be supplied, and even then the cold down-draughts would be unbearable. Those whose churches are heated on the low-pressure system can best testify to this, especially if the churches be spacious and lofty.

It has been my good fortune to warm thousands of buildings,—public and private,—and in no single instance have I known the premium to be advanced by the fire insurance companies. On the contrary, not only have most of the leading fire insurance companies complimented me on the safety of my scheme, but many have employed me to warm their offices in London and the provinces.

With regard to the purity of the method I employ as my *spécialité*, take the fresh air from outside and convey it through earthenware tubes to the heating-chamber, which is constructed with bricks and covered with stone. In that brick chamber the warm air is generated, and from thence is conveyed, through brick channels, under the floor of the church, and admitted, pure and warm, through perforated gratings, which are placed flush with the floor. By this means an equable and agreeable temperature is obtained throughout the building, within two hours from the time the apparatus is in operation.

JOHN GRUNDY.

LONGTON COTTAGE HOSPITAL COMPETITION.

SIR,—Will you afford us space for protest against "another unsatisfactory competition"?

The above named was limited, by special invitation, to some seven or eight local architects, amongst whom we had the misfortune to be included.

At the outset we obtained a conditional promise that an assessor should be appointed, or we should not have entered the competition.

In due course the secretary apprised us officially of the assessor's appointment, and in reply we wrote, expressing satisfaction that the trustees had adopted this course.

Later (Nov. 28th) he informed us: "The trustees have now decided upon two sets of drawings to select from—viz., Mr. Ford's and Mr. Taylor's." He added: "It only remains to say that your plans are at your disposal, and may be removed by you whenever it suits your convenience."

Now, from inquiries that have since been made, the following facts have been ascertained:—"1. The assessor *never saw* any of the designs sent in, except those of the two favoured competitors already named, the plans of the other invited competitors being virtually suppressed. 2. The two favoured competitors had access to view the whole of the designs before the assessor entered upon his duties; whilst, on the other hand, the *un*favoured competitors (such as ourselves, Mr. Lynam, and all the rest), some of whom had asked for, or been promised, that privilege, were never allowed to see the designs at all. Comment appears needless.

Leek, Dec. 18, 1888. W. SUGDEN & SON.

"THE NEW LAW COURTS BRANCH OF THE BANK OF ENGLAND."

SIR,—With reference to the description of this building, which appeared in your last issue, will you permit me the opportunity of stating, and thus correcting an impression calculated to mislead your readers, that the private offices and residential apartments throughout the Bank are warmed and ventilated by means of "The London Grate," an improved ventilating grate in terra-cotta, recently introduced and manufactured by me, which ensures a constant inflow of agreeably warmed *fresh* external air, while its extraction after use is provided for by the introduction of my "Air Chamber Smoke Flues," a continuous circulation and change of air being, by these means, maintained at all times without draught, and a large return secured from the great percentage of the heat which in ordinary fire-places passes wastefully away.

GEORGE JENNINGS.

Stangate, Lambeth, Dec. 20.

Spanish Exhibition in London, 1889.—We are informed that all matters have now been definitely settled for holding a Spanish Exhibition next year at Earl's Court, upon the site of the late Italian Exhibition, when the President will be the Duke of Wellington, Grandee of Spain, and the vice-President, Colonel G. T. North. The Industrial Section of the Exhibition will consist of a display of the various manufactures of Spain and her colonies, whereby the public will be enabled to form some idea of the latent resources of the Spanish peninsula. A special selection of paintings and sculpture by Spanish artists, and representative collections of articles from the chief centres of the Spanish industry, including laces, Cordova leather, Toledo steel, Damascene ware, &c., will be included. Many descriptions of products will also be on view, including the raw materials, food stuffs, minerals, &c.; and a great feature will be made of the costumes worn in the different provinces. Spanish streets, villages, and shops will be erected and peopled by the men and women from the different districts, in their picturesque dresses. There are even to be daily exhibitions of bull-fights,—but, we are told, "with one very strong point, viz., without the accompanying cruelty usually practised." How a bull-fight can be a bull-fight without cruelty we have yet to learn. It is anticipated by the promoters that the exhibition will be open to the public about the middle of April next.

The Student's Column.

ARTIFICIAL STONES.—XXV.

Methods of Indurating Artificial Stone by Exposure to Gases (continued).

NICHOLLS and MILLAR'S decorative compound, patented in 1885, is formed of a mixture of powdered brick-dust, pumice, slag-wool, and Portland cement, moistened in solution of chloride of magnesium (or bitterne water), carbonates of soda and ammonia and caustic soda. The caustic soda and carbonate would cause the formation of a portion of hydrate and carbonate of magnesium, which, uniting with undecomposed chloride, would form the desired oxychloride. The addition here of an ammonium salt seems at first sight of doubtful utility, as such compounds tend to prevent the precipitation of magnesium compounds, yet it may in virtue of this very property be useful in preventing the too rapid setting of the mixture, and owing to its volatile character, its expulsion, and the removal of its retarding influence, would only be a matter of time and temperature. To impart strength and flexibility to the compound, the inventors mould it on wire or perforated metal-work, or incorporate it with tow. In some cases the soluble silicate and chloride of calcium treatment is applied, and the stone finally washed with a solution of bichromate of potash.

Erdmenger states that magnesia calcined at a low temperature possesses the property when added to Portland cement of rendering the latter more durable and better able to withstand the influence of the salts of sea-water. The temperature of calcination has an important practical bearing upon this matter, for M. Lechartier has pointed out* that magnesia calcined at a high temperature has a most evil effect upon the durability of Portland cement, in consequence of its peculiar property, first noticed by St. Clair Deville, of uniting with water to form a hard hydrate, an increase of volume at the same time taking place; this hydration, in the case of over-calcined magnesia, only takes place after a prolonged contact with water, so that in some cases investigated by Lechartier (the cement having been made from dolomitic marl, and which seemed to set very hard, and to be in all respects most satisfactory), in a year or two disruption of the cement and destruction of buildings in which it had been employed showed the practical effect of a neglect of Deville's observation.

The indurating effect of ammonium salts is disputed by some, but they are nevertheless used by several patentees in artificial stone mixtures. Bodmer and Wilson in 1862 prepared artificial stone by adding to various mixtures of stones, cements, sand, &c., solutions of sal ammoniac or other ammonium salts.

In O'Neil's patent (1881, pat. 5,033) the stone is made from equal parts of Portland or blue lias cement, cinders or coke-dust, and powdered marble mixed with water containing one per cent. of borax; the mixture may be run into moulds, allowed to set for twenty-four hours, rubbed down with sand-paper and coloured or enamelled by usual processes.

Barium salts are often useful additions to stone-forming cements, and Meyn and Armack in their patent (1885, pat. 13,595) employ them. In carrying out their invention very fine cement is mixed with baryta: if a variegated marble or stone is to be formed, separate portions of the cement are mixed with appropriate colours and formed into stiff paste with water, then suitable pieces are kneaded up with dry cement, which naturally adheres to the wet lumps and imbeds them. The articles are shaped when sufficiently dry and hard, polished by grinding and application of lime water and water glass, and finished off with putty powder, tripoli, &c.

In the artificial stones patented by J. Potter in 1864, the well-known binding power of sesquioxide of iron is utilised; iron filings being added to sand and mixed with water containing either chloride of ammonium or common salt in solution. The iron, in these circumstances, rapidly undergoes oxidation, and the desired cementation takes place.

A material known as "Metallic Cement," which produces a dark stone-like mass, is formed by adding iron filings to blue lias lime.

A stone introduced in Belgium for paving purposes was formed by placing small and well-dried stones in moulds and then running in either molten iron or lead to bind them in one mass; the great weight and cost of the product, even if the agglomeration of the small stone were satisfactory, render the invention of little practical value.

* Compt. Rend., vol. 102, p. 1,223.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

494, Fireproofing Mills and Buildings. J. Hilton.

This invention relates principally to fireproofing existing mills, which are built with wooden beams and joists. To these parts of structures wrought-iron casings are fixed, and secured to the beams and pillars by brackets, or such-like fixtures. H or T iron joists are placed from beam to beam, or from wall to wall, and secured by bolts. Between these joists concrete is fixed, bricks or slabs being specially made to suit the spaces, and then the whole is plastered over, thus preventing any direct action of the fire thereon. This method will (it is claimed) only diminish the height of the rooms by about 5 in., and by fireproofing the underside of the roof in the same way, the rooms are kept at a more even temperature, and the expense of insuring the building and machinery will thereby be greatly reduced.

495, Roofing Felt. S. & T. Cooper.

For this purpose "Wood Wool" or "Wood Straw" is used, in which the length of the staple has been reduced by the aid of special machinery. The product is treated in the same way as fibrous materials, being mixed with tar or compound. The cost is lessened, while the material is quite as effective as roofing felt made in the ordinary way.

559, Supporting Sliding Windows. H. A. Ivatt.

According to this invention, a rail or flap is kept in a vertical position by a spring, but when it is desired to support the sliding window it is pushed forward so as to engage with recesses in the window-frame; or when the window is lifted entirely above it, it may be placed horizontally, and on the window being lowered down upon it, the rail will support the window.

4,012, Sash-fastener. T. Dykes.

The subject of this invention is a locking-fastener, the chief feature of which is a kind of handle hinged to the fastener bar. This handle serves the purpose of (1) a convenient part for grasping in operating the fastener, (2) a means of automatically locking the fastener, and (3) a device for guiding the window-blind past the meeting-rail of the sashes.

4,493, Chimney-cowls. J. W. & A. L. Sizer.

In the funnel of an ordinary lobster-back cowl, vanes are, according to this invention, disposed around the spindle on which the cowl revolves, and a short nozzle extending laterally from the back of the cowl directs the wind on these vanes, which, then revolving, assist the up-draught.

8,542, Raising Girders. G. Anderson (of Madras).

According to this invention, instead of derricks or scaffolding upon the tops, say, of bridge-piers, a vertical superstructure is constructed, from the top of which projects, at right-angles with the line of the bridge, two cantilevers, one on each side, for the actual lifting-screw or hydraulic jacks and lifting-rods are employed. The girders are floated out to or put together at the foot of the piers, one above the other below stream. Two bars are fixed to the end of the girder, so as to form with it a triangle. During the lift the upper of the two bars will be in compression and the lower in tension, the junction being the point at which the lifting-rod is connected. As both girders are lifted at the same time there is no lateral strain on the superstructure.

10,801, Sanitary Traps. G. H. Garrett.

In order that the water-seal may not be broken by a sudden rush of water carrying all the water from the bend, a branch-pipe or chamber (only open at the end connected with the trap), is, according to this invention, fixed near the dip or bend. The action is then, when the rush of the fluid syphons the bend, the branch chamber is left full, the reserve immediately flowing through the opening and re-charging and re-sealing the trap.

NEW APPLICATIONS FOR PATENTS.

Dec. 7.—17,879, H. Watts, Water-closet Seat Protective Covering, &c.

Dec. 8.—17,949, R. Hudson, Metallic Furniture for Gates or Doors.—17,959, J. Williamson, Self-attaching Door-chain. — 17,970, W. Lindsay, Window-sashes.

Dec. 10.—17,990, W. Balmforth, Securing Door-knobs, &c., to Spindles.—17,991, J. & A. Duckett, Water-closets.

Dec. 11. — 18,038, J. Strachan & J. Alefleet, Securing Sash-lines to Sashes.—18,049, J. Gibson & W. Glazier, Step-ladders, &c. — 18,070, T. Aldridge, Chimney-pot and Ventilator.—18,073, J. Ferguson, Fireproof Ventilating Hearth.

Dec. 13.—18,195, H. Heaton & W. Knight, Chimney-pots.—18,235, C. Roe, Fire-grates.

PROVISIONAL SPECIFICATIONS ACCEPTED.

14,665, W. Cottam, Flushing Water-closets.—14,743, J. Martin, Draught and Dust Excluder for Windows.—15,420, F. Lamacraft, Windows and Window-fastenings.—15,421, W. Hucks, Washing and Sifting Sand, &c., for Building Purposes.—15,541, C. Henman, Bolts or Fastenings for Doors.—15,543, E. Newton, Horticultural Buildings, &c.—15,668, W. Smith, Wood-planing Machines.—16,113, P. Evans, Cement.—16,131, A. McKechnie, Stone-dressing Tool.—16,169, F. Abbey & A. Walshaw, Chimney Pot.—16,234, J. James, Calcining Cements, Materials, &c.—16,354, R. Taylor, Concrete-mixing Machine, &c.—16,786, R. Jackson, Securing Cords to Sash-windows.—16,940, W. Bendall, Paint Brushes.—17,415, A. Katz, Building Blocks.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

17,326, J. Hill, Opening and Closing Fanlights and Skylights.—284, M. Adams, Floor Tiles.—1,295, R. Harrison, Opening, Closing, and Adjusting Fanlights, &c.—1,394, C. Heaton, Ornamental Work for Walls, &c.—1,587, K. Garbe and K. Ross, Attaching Door-knobs, &c., to Spindles.—2,180, H. Wien, Water-closet and Privy Seats.—2,272, J. Bassett & F. Seyde, Fireproof Ceilings and Partitions.—2,815, M. Fawcett, Fireproof Floors.—7,211, I. Hawkins, Construction of Sewers.—16,272, B. Holbrook, Ventilators.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

DEC. 10.

By J. P. HOPE.

Acton—2 and 3, Burlington-mews, 88 years, ground-rent, £6. 6s.	£250

By EASTMAN BROS.

Islington, Byron-road—Five plots of freehold land	75

DEC. 11.

By B. BROWN.

Old Ford-road—No. 386, Freehold	970
Victoria Dock-road—No. 147, term 66 years, ground-rent, £6	610

By REYNOLDS & EASON.

Clapton—183, Glenarm-road, and 6, 8 to 11, Clarke's-terrace, 88 years, ground-rent £30	875
Dalston—155, Queen's-road, 31 years, ground-rent £8	255

By F. HARDS.

West Norwood—The freehold licensed beerhouse in Hamilton-road	775
Deptford—4, Crossfield-lane, freehold	105
New Cross—63, Railway-grove, 57 years, ground-rent £3. 10s.	125
Blackheath—37, Tranquil-vale, 70 years, ground-rent £45	225

By DEBENHAM, TEWSON, & CO.

Notting Hill, Pottery-lane—Freehold land, 4a. 0r. 7p	8,500
Hackney—211, Richmond-road, 78 years, ground-rent £7	350
213 to 223 odd, Richmond-road, 78 years, ground-rent £42	2,150
1 to 4, Gladstone-buildings, 97 years, ground-rent £36. 10s	1,810
Rotherhithe—1 to 9, Mariner's-buildings, and 1a, 1, 2, and 3, Stroud's-cottages, 66 years, ground-rent £25	300

DEC. 12.

By WEATHERALL & GREEN.

Clapham—92 and 94, Wirtemberg-street, freehold	1,010
Sidcup, Kent—Denham Cottage, term 91 years, no ground-rent	650

By C. W. MILLAR.

St. John's Wood—22, Wellington-road, 32 years, ground-rent £3. 8s.	490

By J. H. HUNTER.

Holloway—65, Cornwallis-road, 66 years, ground-rent £5	195
111, Marlborough-road, 68 years, ground-rent £6	325
30, Sussex-road, 64 years, ground-rent £5. 5s.	320
35, Grafton-road, 64 years, ground-rent £6. 6s.	280

By HOBSON, RICHARDS, & CO.

Chelsea—25, Tetcott-road, 94 years, ground-rent £6. 16s.	260

By H. N. NEWTON & CO.

Regent-street—4, King's Arms-yard, 3 years, no ground-rent	85
Hampstead-road—17, Robert-street, 33 years, ground-rent £7. 7s.	530
St. John's Wood—70, Abbey-road, 49 years, ground-rent £17	860
Finsbury—5 and 6, Clifton-place, freehold	990
Hampstead-road—Profit rental of £90, term 12½ years	860
Bayswater, Leinster-terrace—"The Leinster Arms," 63 years, ground-rent £15	2,600

By H. J. BLISS & SONS.

Bethnal Green, James-street—Freehold stabling, &c., area 10,300 ft.	2,000
Leytonstone—1, Leybourne-road, 91 years, ground-rent £6	380
Spitalfields, Brick-lane—"The Phœnix" beerhouse, freehold	1,000

DEC. 13.

By HERRING, SON, & DAW.

Brixton—20, Kepler-street, 79 years, ground-rent £6. 10s.	230
Camberwell—17, 19, and 21, Daneville-road, 72 years, ground-rent £6	920

By C. C. & T. MOORE.

Bethnal Green—27, 29, and 31, Virginia-road, copyhold	460
Spitalfields—10 and 11, Great Pearl-street, and 7, 8, and 9, Little Pearl-street, freehold	1,000
29, Great Pearl-street, "The Prince of Wales" beer-house, freehold	620
Bow-road—7, Coborn-street, 28 years, ground-rent £2	430

DEC. 13.

By NEWBON & HARDING.

Haymarket—1 and 2, Archer-street, and 18 and 19, Great Windmill-street, freehold	10,000
Battersea—19 and 21, Ingrave-street, 58 years, ground-rent £10. 4s	500
20 and 22, Ingrave-street, and a cottage, 63 years, no ground-rent	995
123, Plough-road, 91 years, ground-rent £7. 10s.	225
Finsbury-park—81, Florence-road, 90 years, ground-rent £7	350
Islington, Pickering-street—A plot of freehold land	110

By F. J. BISLEY.

Rotherhithe—109, Albion-street, freehold	150

By E. STIMSON.

Brixton—11 to 17 odd, Poplar Walk-road, 78 years, ground-rent £18	855
Peckham—39 and 41, Burchell-road, 79 years, ground-rent £8. 10s.	355
Commercial-road, E.—83, Sutton-street, 10 years, ground-rent £4. 10s.	50
89, 91, and 93, Grosvenor-street, 8 years, ground-rent £7	120
Poplar—23 and 25, North-street, and 1 to 6, Speeding-gardens, copyhold	980

By WORSFOLD & HAYWARD (at Dover).

Dover—79, Biggin-street, freehold	620
10, Albert-road, 77 years, ground-rent £2. 12s.	355
Charlton, Edred-road—Freehold house and stabling	440
A plot of freehold land	20

DEC. 14.

By C. & H. WHITE.

Walworth—19 Arthur-street, 44 years, ground-rent £3	250
6 and 8, Arthur-street, 44 years, ground-rent	500
Forest Hill—1 to 9 odd, Ewart-road; and a plot of land, freehold	640

By J. REVILL.

East Moulsey, Manor-road—Ordnance Lodge, freehold	455

Miscellanea.

West London School of Art.—The annual distribution of prizes in connexion with this school took place on Friday, the 14th inst., at the school in Great Titchfield-street. Mr. G. A. Thrupp, Chairman of the Committee, presided, supported by Mr. Seymour Lucas, A.R.A., and Mr. G. A. Storey, A.R.A. In distributing the prizes, Mr. Seymour Lucas highly commended the work of the students, which he considered of much greater merit than that usually done at such schools, and he also bore eloquent testimony to the ability, earnestness, and experience of Mr. John Parker, the new head master, as a teacher. Mr. Storey read an interesting paper on "Meissonnier," tracing in all his works evidences of a close and ardent study of nature. The Committee have recently engaged Mr John Parker, R.W.S., as head master, and other changes have been made in the teaching staff, which will increase the future efficiency of the school. Separate life classes are now opened for male and female students, and a special class for flower painting from nature has been formed under the direction of Miss Louisa Aumonier (a frequent exhibitor at the Institute, Dudley, and other galleries), while the class for design is ably conducted by Mr. M. Coulson. The "Mence Smith" Travelling Studentship (given for "colour decoration" by a member of the Painter-Stainers' Company, and open to all the schools of art in London) was taken by Mr. James West; and Messrs. Wm. Woollams & Co.'s annual prize for the best design for a wall-paper was awarded to Miss Amy Woodall.

Alloa Town-hall.—On the 14th inst., the inhabitants of Alloa were formally presented with a town-hall and public library. For the munificent gift, which is of the estimated value of 30,000*l*., they are solely indebted to a native of the town, Mr. John Thomson Paton. The building is erected on a site in Marshill, at the south-east corner of Glebe-terrace, not far from the Sheriff Court-House. Mr. Thomson Paton employed Mr. Alfred Waterhouse, R.A., London, architect, and under his direction a structure has been erected which (according to the *Glasgow Herald*), while it is picturesque, so far as its exterior is concerned, is commodious and attractive inside. The style of architecture is a very broad treatment of domestic Gothic. The building consists of two portions, one four stories in height, and covering nearly the whole width of the site towards Church-street, and the other two stories in height, extending backwards at right angles from the front portion. The library, reading, and recreation and class rooms are to the front, while the Town-hall occupies the whole back portion. The central block of the front part projects beyond the general building line.

Unremunerative Property in Glasgow.—On Monday evening, Mr. James Chalmers, architect, delivered an address entitled "Some Considerations Affecting Unremunerative Property in Glasgow," to the members of the Architectural Section of the Glasgow Philosophical Society. Mr. James Thomson, President of the Section, occupied the chair. Whether a property was remunerative or unremunerative depended, Mr. Chalmers said, on the return or the rate of interest it yielded on the money invested. The Glasgow City Improvement Trust, in order to save a certain loss, combined with the pleasure of providing a few houses for the poor, were willing to consider a small interest as an ample recompense for their expenditure. But a distinction must be made between business and philanthropy. Property was remunerative or otherwise according as it returned an adequate or inadequate interest. Mr. Honeyman thought 5 per cent. a fair interest on the housing of the poor, and others considered 4 per cent. sufficient, holding that plenty of capital would be forthcoming at that rate. When it was believed that property was the investment of the future, speculators rushed into building operations, with the result that the supply exceeded the demand, and the investment became an unremunerative one. That was the case at the time of the building mania, twelve or fifteen years ago, the result of which was that the public had no confidence in property as an investment. If property were bought when at its cheapest, and the investor could afford to hold it, he was sure to gain; but if bought at its dearest he was sure to lose, unless he could hold until another inflated time came. Regarding the houses inhabited by the poor, Mr. Chalmers said that if they were not remunerative it was because these slums had changed hands at an inflated value, and the present holders must be taking extraordinary means to retain a sufficient interest on this value. He thought that after allowing for taxes, repairs, and depreciation, the risk in this class of property should be amply covered by a return of 4 per cent. Referring to the tenements erected by the Improvement Trust in Saltmarket, he said it seemed to be admitted on all hands that they were not dwellings for the poor. The rent the poor could afford was 7s. 6d. to 10s. per month, and as the rent charged was more than that, they were valueless to the poor. He thought property was taxed too highly, and that all real property, or actual income, should be taxed as well as property. At the close of the paper a short discussion took place, the speakers being Mr. A. Lindsay Miller, Secretary of the Section, and the President; and the author of the paper was awarded the best thanks of the meeting. There was a large attendance. At the next meeting of the Section Mr. Henry Dyer, M.A., B.Sc., C.E., late Principal of the Imperial Engineering College of Japan, will read a paper on "The Training of Architects."

Some New Periodicals.—The Christmas numbers of the *Boys' Own Paper* and the *Girls' Own Paper* form excellent supplements to those admirable magazines for boys and girls. They are published for sixpence each, at the office of the *Leisure Hour*, 56, Paternoster-row. The last-named periodical commences a new volume with the January number, which contains the first of a series of articles by Mr. W. J. Hardy, F.S.A., on "The Handwriting of our Kings and Queens," with *fac-similes*. The *Sunday at Home*, published at the same office, also commences a new volume with the New Year.——"The New Popular Educator" (London: Cassell & Co.) is a new re-issue of Messrs. Cassell's "Popular Educator," which has been almost entirely re-written and re-arranged, and brought up to the level of modern requirements. New illustrations, new maps, new type, and the re-arrangement of the pages in a more convenient form than hitherto, are all features likely to render this important educational work increasingly useful and more "popular" than ever.

The Sanitary Institute.—At a meeting of the Council, held on Wednesday, December 12, Sir Douglas Galton, K.C.B., F.R.S., in the chair, it was decided to hold three examinations next year,—one for Surveyors in July, and two for Inspectors of Nuisances in May and November. Special courses of lectures and demonstrations for sanitary officers were decided upon, and a course of lectures on Domestic Hygiene for Ladies to be given in Lent. Fifty-nine Members and Associates were added to the register, and forty-three applications read for election at the next meeting.

The Athens Exhibition. — An Athens correspondent writes:—The exhibition here, which was opened on the occasion of King George's Jubilee, is due to the exertions of two merchants, the brothers Evangelos and Constantinos Zappos, both of whom are well known for their philanthropy. The exhibition building, which is surrounded by a park, and for which the Royal Gardens serve as background, stands by the Olympian Zeus Temple at the foot of the Acropolis. The building contains twenty large rooms, in which the various exhibits have been arranged with great taste. In the first section are found collections of ores and metals by the Greek and French mining companies at Laurion, and models and drawings of the machinery and plant used in cutting the Isthmus of Corinth. The second section contains specimens of all minerals found in Greece, among which the various samples of marbles attract particular notice. The third section contains a collection of woollen and silk fabrics, Oriental carpets, portières, curtains, &c. In one of the other sections are samples of work of the pupils at the Polytechnic School at Metsowo, consisting of maps, models, and drawings; further, for the exhibits of the first Greek stearine candle-factory at Korkyra, and the collection of furniture, the latter showing a curious blending of Paris imitations and Oriental originals. Next follows the sections representing the Greek wine, agriculture, cotton, tobacco, and engineering industries. Finally, there is a fine art collection, containing many splendid paintings and pieces of sculpture. The whole exhibition is a significant demonstration of the remarkable progress made by Greek industry during the last twenty-five years.

The English Iron Trade.—The approach of the Christmas holidays is having a quieting effect upon the English iron market, which, however, on the whole, remains pretty steady, and in some branches shows a rising tendency, in anticipation of a brisker trade in the New Year, which is confidently expected by those best able to judge. Pig-iron has been somewhat weaker this week,—in the North of England at least. Although the Glasgow warrant market has shown little animation, and quotations have been gradually going down, Scotch makers' prices are stiff. Middlesbrough pig is 3d. a ton lower,—at 33s. 9d. Mixed numbers of north-west hematites have declined 4d., and are now 44s. 8d. Values of pig-iron in Lancashire and Staffordshire are firm. There is very little change either in the finished iron and steel trades, both as regards the tendency of the market and prices. The tone is strong, and rates have an upward tendency. Common bars are 2s. 6d. a ton higher. Tin-plates are quieter, but large shipments are being made. Shipbuilders continue to book orders, thus making up for the tonnage launched. Activity is being maintained in the engineering trade.—*Iron.*

The National Standard Theatre again in the Auction Mart.—It is only two months since this theatre was offered for sale at the auction mart under the will of the late Mr. John Douglass, when it was withdrawn in consequence of the biddings not having come up to the reserve. On Monday last it was again submitted to competition, the auctioneer being Sir J. W. Ellis, as on the former occasion Sir J. W. Ellis, in submitting the property, pointed out that, as a freehold estate, covering an area of 17,100 ft., the site alone, at the lowest estimate, was worth not less than £30,000. The biddings commenced by an offer of £20,000, two advances only on this sum being made, when the bidding stood at £21,000, which was the highest offer, being £10,000 less than was bid for the property so recently as October last. In again withdrawing it, the auctioneer said it was considerably below the moderate reserve which had been fixed.

The New Government Buildings in Christiania.—The jury adjudging upon the designs sent in for the new Government buildings at Christiania have now decided upon the programme for the final competition. Five designs have been selected, the architects being anonymous, and they will have nine months in which to prepare the final designs according to the suggestions contained in the programme, and will each receive a fee of 120*l.* In addition, the successful competitor receives 160*l.* for his design.

Removal.—Messrs. John Knowles & Co. give notice that on January 1, 1889, their head offices will be removed to larger premises at 38, King's-road, St. Pancras, N.W., adjoining their new depôt, Star Wharf, on Regent's Canal.

The Liverpool Engineering Society held its fortnightly meeting on the 12th inst., at the Royal Institution, Colquitt-street, Liverpool, the President, Mr. C. H. Darbishire, Assoc.-M.Inst C.E., being in the chair. A paper entitled "The Supply of Salt Water to the Public Baths, Bootle," was read by Mr. W. M. Blair, Assoc.-M.Inst.C.E., Surveyor to the Corporation of Bootle, who described the details of pipe-line, pumping, machinery, and filter-tanks. The engine and pumps are placed about a quarter of a mile from the Brocklebank Dock, from which the water is drawn through a 9 in. pipe and forced up to the baths, which are about 80 ft. above the Dock. The water is also used for street watering purposes, for which hydrants are provided at suitable intervals. The filter-tanks are constructed entirely of wrought-iron, the main framing being of rolled joists spaced about 4 ft. apart. The filtering material, consisting of broken stone, gravel, and sand to the depth of about 3 ft. 6 in., is placed on a floor of gratings about 7 ft. above the bottom of the tanks. The water from the pumps is delivered at the top of the tanks, and, after being filtered, is retained in the space below until required in the baths. The total capacity of the tanks is about 150,000 gallons, and the contents of the two swimming-baths 100,000 gallons and 45,000 gallons, the water being changed three times weekly in summer. The Corporation of Bootle have decided to extend the salt water mains through the principal streets of the borough for street watering, as the cost of the water is only 2¼d. per 1,000 gallons, this price covering all working expenses and repayment of capital. Several drawings were exhibited showing the construction of the filter tanks and machinery, &c. There was an interesting discussion, and Mr. Blair was thanked for his paper.

A New Recreation Ground at Notting-hill.—What has for many years past been known as the Tile and Pottery Works at Portland-road, Notting-hill, is about to be converted into an open space and recreation ground for the benefit of the residents in the locality. The land, which is freehold, occupying an area of four acres, was last week offered for sale by Messrs. Debenham, Tewson, & Co., at the Auction Mart, when it was sold for 8,500*l.*, being at the rate of upwards of 2,000*l.* an acre. This is the highest price which has been obtained for freehold land in the neighbourhood of Notting-hill for some years past, but it now appears that the unusually high price which it commanded was owing in a great measure to a desire on the part of several influential gentlemen in the locality to prevent it being covered with buildings of the jerry class, which was threatened. Since the sale it has been resold to a committee of gentlemen resident in the district, who have purchased it for the purpose of laying it out as a recreation ground for the use of the public.

Improved Window Fittings. — We have a model and specification, by Mr. George Evans, for facilitating the cleaning of the outside face of sash-windows, in which each sash, as required, is pulled inwards towards the room by the upper rail, the sash turning on two small flush bolts in the bottom rail, which, when shot, act as pivot hinges; the beads are hinged to open inwards. Youlton's "Accident-prevention Window Fitting," a rather more recent patent, is worked in a somewhat similar manner, but with the important difference that the bottom rail is pulled inwards, the top rail being kept in its place by a simple contrivance, and the sash being still suspended to the lines and weights, a method which, in the case of a heavy plate-glass window, throws less strain on the sash. The beads in this case are also hinged. An inspection of the model shows that it is a very cheap and workmanlike method, easily made, and capable of ready adaptation to existing windows.

Sanitary Engineering at Edinburgh University.—At a meeting of the Edinburgh University Court, held on Monday, on consideration of a minute of Senatus, the Court approved of the opening by the Professor of Engineering of a class on Sanitary Engineering in connexion with graduation in Science in the department of Public Health.

Landing in England of the Prince of Orange.—The Brixham Committee for celebrating the bi-centenary of this event met on Wednesday, and decided to entrust the commission for the statue to Messrs. W. & T. Wills, Sculptors, London. The statue will be in marble, 8 ft. in height, on a grey granite pedestal 10 ft. in height.

Peruvian Railways.—At a meeting of the Civil and Mechanical Engineers' Society, held on Wednesday evening at the Westminster Palace Hotel, a paper was read on the Oroya Railway, Peru, by Mr. W. Alfred Eckersley. The author, in commencing, chiefly attended to recent Peruvian history, and the way in which during unnatural inflation money was borrowed in the most reckless manner for railways and other public works which were only half executed when such a series of national reverses and disasters ensued as to almost paralyse the commerce and trade of the country. The natural resources of Peru, however, are so great that the author expressed the greatest confidence in the future prosperity of that country. Proceeding to describe the Oroya Railway, he stated that the line was now open to Chiela—a distance of 87 miles from Callao, but until completed to Oroya, a further distance of 50 miles, the object of the line and the development of the rich mineral and productive districts of the interior would not be accomplished. The present terminus is over 12,000 ft. above sea-level, and is gained by an uninterrupted series of ascending gradients, the steepest being 1 in 25. The sharpest curve allowed is 6 chains radius, but in several places single and double back shunts have been found necessary. The river Rimac and numerous gorges are crossed by viaducts of the American pin truss description, the spans varying from 91 ft. to 205 ft., and resting upon lofty but spidery-looking iron piers, sometimes over 250 ft. high, and the author seemed much impressed with the suitability of this description of ironwork for such situations, and considered it far superior to riveted structures. In making the surveys for the line, and also in constructing the viaduct, men and materials were slung along ropes across the lofty chasm, and much courage and energy must have been displayed; one of the largest of these examples of engineering skill having been erected in four months. The author tested the viaducts with heavy rolling and stationary loads, and found them to be very satisfactory, the deflection at the centre being generally less than 1 in 2,000, and the recovery perfect.

All Saints' Church, Northampton.—This well-known "Wren" church was re-opened on the 13th inst., after being closed several months for restoration. Outside nothing has been done beyond small necessary repairs. In the interior, the leading features of the church have been jealously preserved. The principal alteration is in the chancel. Here the east window has been blocked up on the inside, and a new reredos erected. Corinthian columns and pilasters, resting on a double pedestal, have been introduced. The centre compartment, with a semi-circular arched head, contains a painting of the Crucifixion, by Messrs. Heaton, Butler, & Bayne, of London. The carving is by Mr. Harry Hems, of Exeter. Formerly the entrance into the chancel was bald and meagre in the extreme. This has been remedied by the introduction of coupled Ionic three-quarter columns, supporting an enriched semi-elliptic arch, with large pilasters facing the nave, corresponding with the stone columns which carry the roof of the church and the central dome. The chancel possesses an exceedingly rich ceiling of modelled plaster work of the true Wren type, and to harmonise with this the walls have been covered with ornamental plaster work, executed by Messrs. George Jackson & Sons, of London. A new pedestal in oak, of appropriate design, supports the pulpit, (which, by the bye, contains some very characteristic carving), and takes the place of a modern panelled base. Among minor alterations may be mentioned a new metal corona lighting the centre of the church, manufactured by Messrs. Winfield, of Birmingham, and a new sunlight in the chancel, by Messrs. Strode & Co. The walls and ceilings have been coloured with light and warm tints. The whole of the works, costing about £2,500, have been executed from the designs, and under the superintendence, of Mr. Edmund Law, F.R.I.B.A., Northampton. The contractors for the interior work were Messrs. Smith Brothers, and for the outside restoration Mr. W. Beardsmore.

New Athenæum Club.—The first of a series of dinners was held at the New Athenæum Club on Wednesday, December 12, Major Flower presiding. Mr. H. L. Florence congratulated the members upon the position of the club, and said he was of opinion that this dinner, the first given since the incorporation of the United Arts Club with the New Athenæum, augured well for the continued success of the club.

PRICES CURRENT OF MATERIALS.

TIMBER.	£.	s.	d.	£.	s.	d.
Greenheart, B.G.....ton	6	10	0	7	10	0
Teak, E.I.....load	9	0	0	14	0	0
Sequoia, U.S.....foot cube	0	2	3	0	3	0
Ash, Canada.....load	3	10	0	5	0	0
Birch ,, ...	3	10	0	6	0	0
Elm ,, ...	4	0	0	5	0	0
Fir, Dantsic, &c.	2	0	0	4	0	0
Oak ,, ...	2	0	0	4	10	0
Canada	5	10	0	7	0	0
Pine, Canada red	3	5	0	4	0	0
,, yellow	3	10	0	5	10	0
Lath, Dantsic.....fathom	4	10	0	5	10	0
St. Petersburg.....	5	0	0	6	10	0
Wainscot, Riga, &c.....log	2	15	0	4	5	0
,, Odessa, crown.....	2	15	0	3	5	0
Deals, Finland, 2nd and 1st...std.100	9	0	0	10	0	0
,, ,, 4th and 3rd.....	7	0	0	8	10	0
Riga	7	0	0	8	0	0
St. Petersburg, 1st yellow	10	0	0	15	0	0
,, 2nd ,, ...	9	0	0	10	0	0
,, white	8	0	0	10	10	0
Swedish.....	7	10	0	16	0	0
White Sea	8	10	0	17	0	0
Canada, Pine, 1st	16	0	0	26	10	0
,, ,, 2nd	11	0	0	17	10	0
,, ,, 3rd, &c.	7	10	0	10	10	0
,, Spruce, 1st	9	10	0	10	10	0
,, 3rd and 2nd	7	0	0	8	10	0
,, New Brunswick, &c.	6	15	0	8	15	0
Battens, all kinds	5	10	0	12	0	0
Flooring Boards, sq., 1 in., prepared, First	0	11	0	0	14	6
Second	0	8	0	0	10	9
Other qualities	0	5	6	0	7	9
Cedar, Cuba.....foot	0	0	3½	0	0	4½
Honduras, &c.....	0	0	3½	0	0	4½
Australian	0	0	3	0	0	3½
Mahogany, Cuba	0	0	4½	0	0	5½
St. Domingo, cargo average	0	0	4½	0	0	5½
Mexican ,, ...	0	0	4½	0	0	4½

TIMBER (*continued*).	£.	s.	d.	£.	s.	d.
Mahogany, Tobasco, cargo average.	0	0	4½	0	0	5½
Honduras ,, ...	0	0	4½	0	0	5½
Box, Turkey .....ton	5	0	0	12	0	0
Walnut, Italian .....foot	0	0	4½	0	0	6½
METALS.						
IRON—Bar, Welsh, in London...ton	4	17	6	5	0	0
,, ,, at works in Wales ...	4	7	6	4	10	0
,, Staffordshire, in London ...	5	15	0	7	0	0
COPPER—						
British, cake and ingot..... ton	80	0	0	0	0	0
Best selected	80	10	0	0	0	0
Sheets, strong	84	0	0	86	0	0
Chili, bars	78	0	0	0	0	0
YELLOW METAL.....lb.	0	0	7½	0	0	7⅞
LEAD—						
Pig, Spanish .....ton	13	10	0	0	0	0
Sheet, English.....	14	15	0	0	0	0
SPELTER—						
Silesian, special .....ton	18	7	6	18	10	0
Ordinary brands.....	18	5	0	18	7	6
TIN—						
Straits .....ton	98	0	0	0	0	0
Australian	98	0	0	0	0	0
English Ingots.....	101	0	0	0	0	0
ZINC—English sheet .....ton	22	10	0	23	10	0
OILS.						
Linseed .....ton	18	7	6	18	10	0
Cocoanut, Cochin	28	10	0	29	0	0
Ceylon	27	0	0	0	0	0
Palm, Lagos	28	10	0	0	0	0
Rapeseed, English pale	31	10	0	0	0	0
,, brown	30	0	0	0	0	0
Cottonseed, refined	23	15	0	0	0	0
Tallow and Oleine	19	0	0	45	0	0
Lubricating, U.S.	5	0	0	6	0	0
,, refined	7	0	0	12	0	0
TURPENTINE—						
American, in casks.....cwt.	1	14	9	0	0	0
TAR—Stockholm .....barrel	1	1	6	1	1	9
Archangel	0	12	0	0	12	6

COMPETITIONS, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
Laying-out Hotel and Gardens, Isle of Man ...	Manx Syndicate, Lim.	70*l.*, 20*l.*, and 10*l.* ...	Jan. 30th	ii.
Three New Schools	Dartford School Board	20*l.* and 5*l.*	Not stated...	ii.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Public Market Hall	Rotherham Corporation	A. Neill	Dec. 28th	ii.
Making-up Roads	Chiswick Local Board...	A. Ramsden	Jan. 2nd	ix.
Construction of Streets, &c. &c.	E. H. Warner, Esq., & Captain Warner	W. E. Woolley.....	Jan. 3rd	ix.
Additions to Hammersmith Police Court	H. M. Works	*Official*.....	Jan. 4th	ix.
Construction of Sewers, and Lamp Columns...	Hornsey Local Board	T. de Courcy Meade ...	Jan. 7th	ix.
Work Room	Edmonton Union.....	T. E. Knightley	Jan. 8th	ix.
Roadmaking and Paving Works	Fulham Vestry.....	J. P. Norrington.....	Jan. 9th	ii.
Supply about 1,000 sq. yds of Paving.....	St. George-the-Martyr Vestry, Southwark ...	.....	Jan. 22nd	ix.
Small Concrete Pier, Babbacombe Bay.....	St. Mary Church Local Board	L. F. Vernon-Harcourt	Jan. 29th	ii.
Stores, Materials, and Execution of Works ...	Liverpool Corporation	*Official*.....	Not stated.	ix.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Draughtsman	Civil Service Com.	Not stated	Jan. 10th	xiv.
Clerk of Works	Barking Local Board ...	3*l.* a week	Not stated...	xiv.

TENDERS.

[Communications for insertion under this heading must reach us *not later than* 12 *Noon on Thursdays.*]

AUDENSHAW.—For sewering, paving, kerbing, and flagging Martin-street, Bridge-street, Mount Pleasant-street, No. 1, and Mount Pleasant-street, No. 2. Mr. J. H. Burton, Surveyor, Warrington-street, Ashton-under-Lyne.

Worthington & Pownall, Rusholme-road, Manchester. (Accepted at per schedule of prices. Ten tenders were received.)

BARWICK (Herts).—For the erection of the "Factory Arms" Public House, Barwick, Herts, for Messrs. McMullen & Sons, Ware, Hartford. Mr. Alick G. Thorowgood, architect, Ware. Quantities by Mr. Henry Theobald, P.A.S.I., 87, Finsbury-pavement:—

Cates, Puckeridge (accepted)	£750 0 0

BRENTFORD.—For levelling the recreation-ground, for the Brentford Local Board. Mr. F. W. Lacey, A.-M.I.C.E., surveyor:—

T. Street, Hounslow	£367 15 4 !
S. Saunders, Fulham	251 2 0
W. Parker, Brentford	249 17 6
W. Neave & Son, Paddington	243 0 0
G. Fraser & Son, Battersea-park, S.W.*	137 1 6 !

* Accepted.

[Surveyor's estimate, £225.]

BEDFORD.—For the erection of St. Martin's Church. Mr. J. A. Chatwin, architect, Birmingham:—

Haynes	5,325 0 0
Coleman & Fathers	4,921 0 0
Osborn	4,761 0 0
Tomolswood	4,150 0 0
White	4,097 0 0
Collins	4,048 0 0
Corby	3,972 0 0
Warton & Walker	3,937 0 0
Foster	3,849 0 0

BEDFORD.—For erecting new tower and copper-house and alterations to old buildings at the Horne-lane Brewery, for Mr. C. Wells. Mr. Arthur Kinder, architect, Suffolk House, Lawrence Pountney Hill, Cannon-street, London, E.C. Quantities by Mr. Alexander H. Kinder, 34, Clement's-lane, London, E.C.:—

T. Spencer	£1,379 0 0
W. Haynes	1,351 0 0
Warton & Walker	1,326 0 0
Freshwater & Sons	1,315 0 0
S. Foster (accepted)	1,315 0 0

[All of Bedford.]

BRIGHTON.—For erecting public elementary schools, on ground situate near Park-road, East Brighton, for the School Board for Brighton and Preston U.D. Mr. Thomas Simpson, architect:—

	Main Buildings.	Extra Finishings.	Total.
Saunders	£9,739	£226	£9,965
Lockyer	8,393	209	8,602
Longley	8,284	240	8,524
Barnes	8,070	215	8,285
Dean	8,090	194	8,284
Taylor	7,900	184	8,084
Chappell	7,790	209	7,999
Stimpson*	7,630	230	7,860

* Accepted.

BROMLEY (Kent).—For laying 1,250 feet of 9-inch stoneware pipe sewer (Doulton's patent joints) in Plaistow-lane, for the Bromley Local Board. Mr. Hugh S. Cregeen, surveyor:—

W. & J. Woodhams	£182 0 0
E. Peill & Sons	167 10 0
T. Lansbury (accepted)	165 0 0

BUILTH.—For erecting semi-detached villa residences, Builth. Mr. S. H. Cowper-Coles, architect:—

H. Owen, Builth	£760 0 0
J. M. Jones, Builth	720 10 0
A. Meredith, Newbridge-on-Wye*	708 0 0

*Accepted.

COLCHESTER.—For the erection of new curriers' factory, Factory-lane, Colchester, for Messrs. Warmington & Co. Mr. J. F. Goodey, architect, Colchester:—

C. F. Orfeur, Colchester	£2,100 0 0
H. Everett & Son, Colchester	2,000 0 0
W. A. Chambers, Colchester	1,889 0 0
G. Grimwood & Son, Sudbury	1,870 0 0
G. Dobson, Colchester	1,830 0 0
H. Ambrose, Colchester	1,825 16 0
A. Diss, Colchester	1,760 0 0
F. Dupont, Colchester	1,735 0 0

COLCHESTER.—For the erection of four cottages, West Mersea, for Mr. H. Mussett. Mr. J. F. Goodey, architect, Colchester:—

W. Shead, Berechurch	£711 0 0
G. Dobson, Colchester	694 0 0
F. Dupont, Colchester	615 0 0
H. Ambrose, Colchester	605 15 0
A. Diss, Colchester	585 0 0
C. E. Orfeur, Colchester	537 0 0

COLCHESTER.—For the erection of new grain store, East Mills, Colchester, for Messrs. E. Marriage & Son. Mr. J. F. Goodey, architect, Colchester:—

A. Diss, Colchester	£2,460 0 0
H. Everett & Son, Colchester	2,317 0 0
G. Grimwood & Son, Sudbury	2,295 0 0
G. Dobson, Colchester	2,288 0 0
F. Dupont, Colchester	2,275 0 0
W. A. Chambers, Colchester	2,179 0 0

CROMER.—For Deepening No. 1 Well for the Cromer Water-works Company, at Cromer. Mr. J. C. Melliss, engineer:—

J. Villiers, East Gate, Beverley	£1,236 0 0 !
E. Timmins, Bridgewater Foundry, Runcorn	949 0 0
L. Hills & Co., 136, Old-street, London, E.C.	622 0 0
T. Tilley & Son, 15, Walbrook, London, E.C. (accepted)	475 17 6 !

CROYDON.—For laying out and constructing recreation grounds, &c., in the Borough of Croydon, for the Corporation of Croydon:—

Stubbs Mead.

A. Bullock	£1,323 4 0
H. Lake	1,100 18 8
W. Langridge (accepted)	934 10 6
H. Streeter	898 4 0

Brighton-road.

H. Streeter	£399 2 6
W. Langridge	392 5 9
A. Bullock (accepted)	372 4 4

Crunden-road.

W. Langridge	£330 17 6
A. Bullock (accepted)	322 0 0

South Norwood.

Clarke	£833 4 4
T. Butcher	647 1 9
H. Streeter	644 14 2
A. Bullock	636 5 11
H. Lake	597 9 10
W. Langridge (accepted)	596 12 1

Upper Norwood.

Clarke	£1,068 16 9
W. Langridge	996 13 11
A. Bullock	944 9 9
H. Lake (accepted)	897 13 4
H. Streeter	785 9 9

[All of Croydon.]

CROYDON.—For the erection of two villa residences at Birdhurst-rise, Croydon, for Mr. I. Kendall. Mr. E. C. Homer, architect, 90, Gresham-street, E.C.:—

A. Nash (accepted)	£2,156 0 0

FULHAM.—For the erection of new married couples' quarters and covered ways at the Fulham-road Workhouse, for the Guardians of the Poor of the St. George's Union. Mr. H. Saxon Snell, F.R.I.B.A., architect:—

W. Oldrey & Co.	£1,750 0 0
Warde, Clark, & Co.	1,596 0 0
Jas. Holloway	1,550 0 0
F. & H. F. Higgs	1,520 0 0
J. Allen & Sons	1,513 0 0
Wall Bros.	1,497 0 0
Multon & Wallis	1,464 0 0
A. R. Flew & Co.	1,295 0 0

HORNSEY.—For making-up private roads, for the Hornsey Local Board. Mr. T. de Courcy Meade, Engineer and Surveyor:—

Shepherd's-hill.

Aspinall & Son, Finsbury Park	£3,900 0 0
Dunmore, Crouch End	3,700 0 0
Mowlem & Co., Westminster*	3,349 0 0

Wolseley-road.

Aspinall & Son, Finsbury Park	£2,249 0 0
Dunmore, Crouch End	2,240 0 0
Mowlem & Co., Westminster*	2,133 0 0

Burgoyne-road.

Mowlem & Co., Westminster	£297 0 0
Dunmore, Crouch End	293 0 0
Aspinall & Son, Finsbury Park*	234 0 0

Ferme Park-road.

Aspinall & Son, Finsbury Park	£3,815 0 0
Dunmore, Crouch End	3,799 0 0
Mowlem & Co., Westminster*	3,583 0 0

Elder-avenue.

Aspinall & Son, Finsbury Park	£1,180 0 0
Mowlem & Co., Westminster	1,112 0 0
Dunmore, Crouch End*	950 0 0

Weston Park.

Aspinall & Son, Finsbury Park	£959 0 0
Dunmore, Crouch End	893 0 0
Mowlem & Co., Westminster*	834 0 0

* Accepted.

LONDON.—For pulling down and rebuilding 370 and 372, Holloway-road, and 2, Tollington-road, for Mr. Wm. Beale:—

Wm. Oldrey & Co., Westbourne-park, W. (accepted)	£12,481 0 0

[No competition.]

LONDON.—For the erection and completion of stables, loose boxes, forge, office, and surgery, at Montpelier House, Hornsey-road, for Mr. A. Stainton. Mr. W. Smith, architect, 80, Upper Tollington Park:—

Ward & Lamble	£973	0	0
Macfarlane Bros.	954	0	0
Lark & Son	920	0	0
Clark	897	0	0
Stevens Bros.	887	0	0
R. D. Lown & Son	835	0	0
C. Dearing & Son	800	0	0
Langham	789	0	0

LONDON.—For altering premises to form new fermenting room for 110 barrel tuns, for Messrs. West & Co., Hackney-road, London. Messrs. Llewellins & James, architects and engineers, Bristol. Quantities by the architects:—

H. Adamson & Son, Chiswick	£475	0	0
T. Mappell, Pimlico	468	0	0
Colls & Son, Moorgate-street	466	0	0
H. D. Evans, Hornsey-rise	400	0	0
C. Cox, Hackney	389	0	0
Wall Bros., Kentish-town	381	0	0
Stephens & Bastow Stewart's-road (accepted),	355	0	0

LONDON.—For alterations, repairs, and drainage work at 20, Bishop's-road. Mr. Edgar H. Selby, architect and surveyor, 26, Craven-street, Strand, W.C.:—
R. Eddie, Upper-street, N. (accepted at per schedule).

MANSFIELD.—For providing and laying cast-iron water-mains and incidental apparatus, for the Mansfield Rural Sanitary Authority. Mr. George Hodson, engineer, Loughborough:—

A. Knighton, Mansfield	£3,020	0	0
Oakes & Co., Altreton	2,180	0	0
John Unsworth, Manchester	2,041	2	8
Jas. Bush & Co., Preston	1,954	0	0
Marriett & Marshall, Alfreton	1,941	17	2
David Barry, Ratcliffe	1,888	0	0
John Lane, Skegby	1,842	18	0
J. F. Price, Nottingham	1,771	0	0
H. Vickers, Nottingham	1,715	0	0
L. Foster, Ratcliffe	1,700	0	0
Pickhall & Sons, Merthyr	1,690	3	6
H. Burrows, Barnsley	1,688	6	6
Jas. Dickson, St. Albans	1,682	0	0
Joseph Tomlinson, Derby (accepted)	1,674	18	4
Chas. Green, Rotherham	1,648	11	0

PONDER'S END (Middlesex).—For alterations and repairs to the "Boundary House" public-house, for Mr. G. Gripper. Messrs. Searle, Halton, & Bowyer, architects, Tottenham:—

Knight, Tottenham	£187	18	8
Lawrence, Waltham	132	8	0
Monk, Edmonton (accepted)	118	0	0

SLOUGH.—For the erection of the Leopold Institute, Public Hall, and Corn Exchange, Slough, Bucks. Mr. Henry A. Cheers, architect:—

Watson, Ascot	£5,595	0	0
Crowhurst, Slough	5,573	0	0
Symonds, Reading	5,475	0	0
Grist, Aylesbury	5,418	0	0
Smith & Sons, London	5,335	0	0
Henley & Co., London	5,252	0	0
Bradley & Co, Wolverhampton	5,182	0	0
Green, Aylesbury	5,112	0	0
Shillitoe, Bury St. Edmunds	4,995	0	0
Page, Banbury	4,995	0	0
Inwood, Malvern	4,975	0	0
Hickinbotham, Teddington	4,765	0	0
T. Martin, Maidenhead (accepted)	4,655	0	0

SOUTHAMPTON.—For alterations and re-seating Above Bar Chapel, High-street, Southampton. Mr. W. H. Mitchell, architect:—

Dyer & Sons, Southampton	£5,370	0	0
W. H. Bull, Southampton	5,249	0	0
Chapman, Southampton	4,980	0	0
Morgan, Isted, & Morgan, Southampton	4,686	0	0
Stevens & Sons, Southampton	4,440	0	0
Crook & Sons, Southampton	4,437	0	0
Witt, Bitterne	4,333	0	0
Franklin, Southampton	3,980	0	0
Kingerlee, Oxford (accepted)	3,845	0	0

THAMES DITTON.—For rebuilding the Ferry Engineering Works, recently destroyed by fire, for Messrs. Williams & Robinson, Limited, Thames Ditton.
W. Cunliffe, Kingston and Dorking (accepted at per schedule of prices).

STRATFORD.—For new show-rooms, &c., to premises, The Grove, Stratford, E., for Messrs. C. Boardman & Sons. Mr. George Baines, architect. Quantities by the architect:—

F. & H. F. Higgs	£2,990	0	0
Hollingsworth	2,935	0	0
M. Gentry	2,850	0	0
J. Godfrey & Son	2,645	0	0
S. J. Scott	2,597	0	0
Battley	2,597	0	0
Coxhead (accepted)	2,544	12	0

SUTTON-IN-ASHFIELD.—For extension of water supply to Kirkby and Skegby, for the Sutton-in-Ashfield Local Board. Mr. George Hodson, engineer, Loughborough:—

David Barry, Ratcliffe	£1,255	0	0
Chas. Green, Rotherham	1,179	0	0
Leonard Foster, Ratcliffe	1,140	0	0
James Dickson, St. Albans	1,118	0	0
James Bush & Son, Preston	1,118	0	0
J. F. Price, Nottingham	1,112	0	0
Henry Borrows, Barnsley	1,108	9	5½
H. Vickers, Nottingham	1,085	0	0
Holme & King, Liverpool	1,056	0	0
Joseph Tomlinson, Derby (accepted)	1,012	13	0

WINCHMORE HILL.—For the erection of two additional pavilions, and alterations and additions to the Administrative Block at the Northern Hospital, Winchmore-hill, for the Managers of the Metropolitan Asylum District, under the superintendence of Messrs. Pennington & Bridgen, architects, 8, John-street, Adelphi, W.C. Quantities by Mr. W. T. Farthing, 46, Strand:—

M. Bax	£12,900	0	0
H. W. Bull	12,849	0	0
Balaam Bros.	12,500	0	0
W. Shurmur	12,286	0	0
Kirk & Randall	11,953	0	0
J. T. Chappell	11,595	0	0
Staines & Son	11,590	0	0
W. H. Lascelles & Co.	11,354	0	0
R. & E. Evans	11,225	0	0
Wall Bros.	11,197	0	0
W. Johnson	11,094	0	0
W. Brass & Son	10,953	0	0
J. Godfrey & Son (accepted)	10,813	0	0
Caplen & Redgrave	10,542	0	0

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TO CORRESPONDENTS.

H. & P. (drawings received).—J. D. C.—C. H. (papers received).—J. C. B. (already noted by another correspondent).—G. F. H.—H. W. B.—T. B W. (thanks; not required).—E. J. P.—W. S. & Son.—H. L. T.—G. H. F. P.—A F.—P. & B.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

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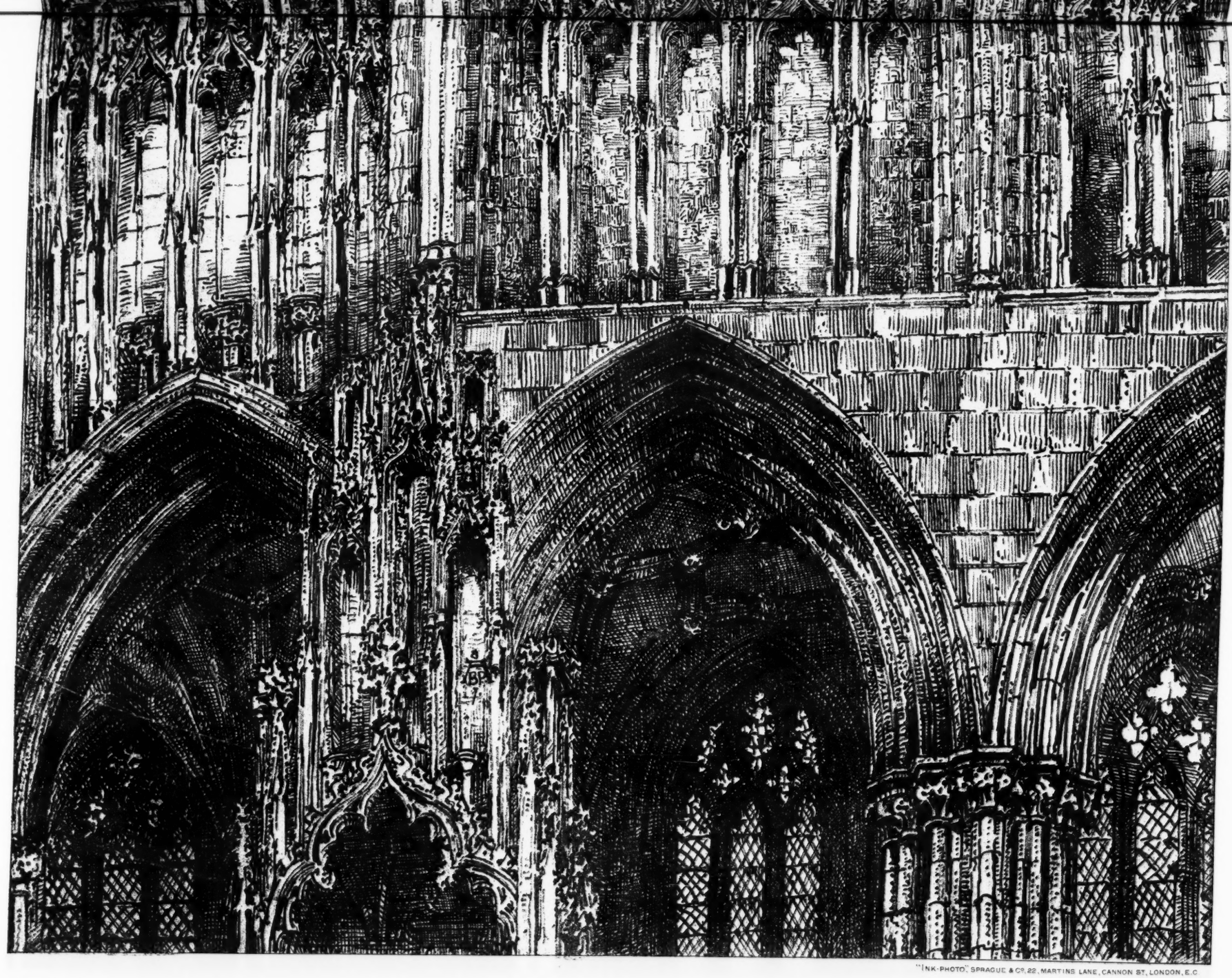

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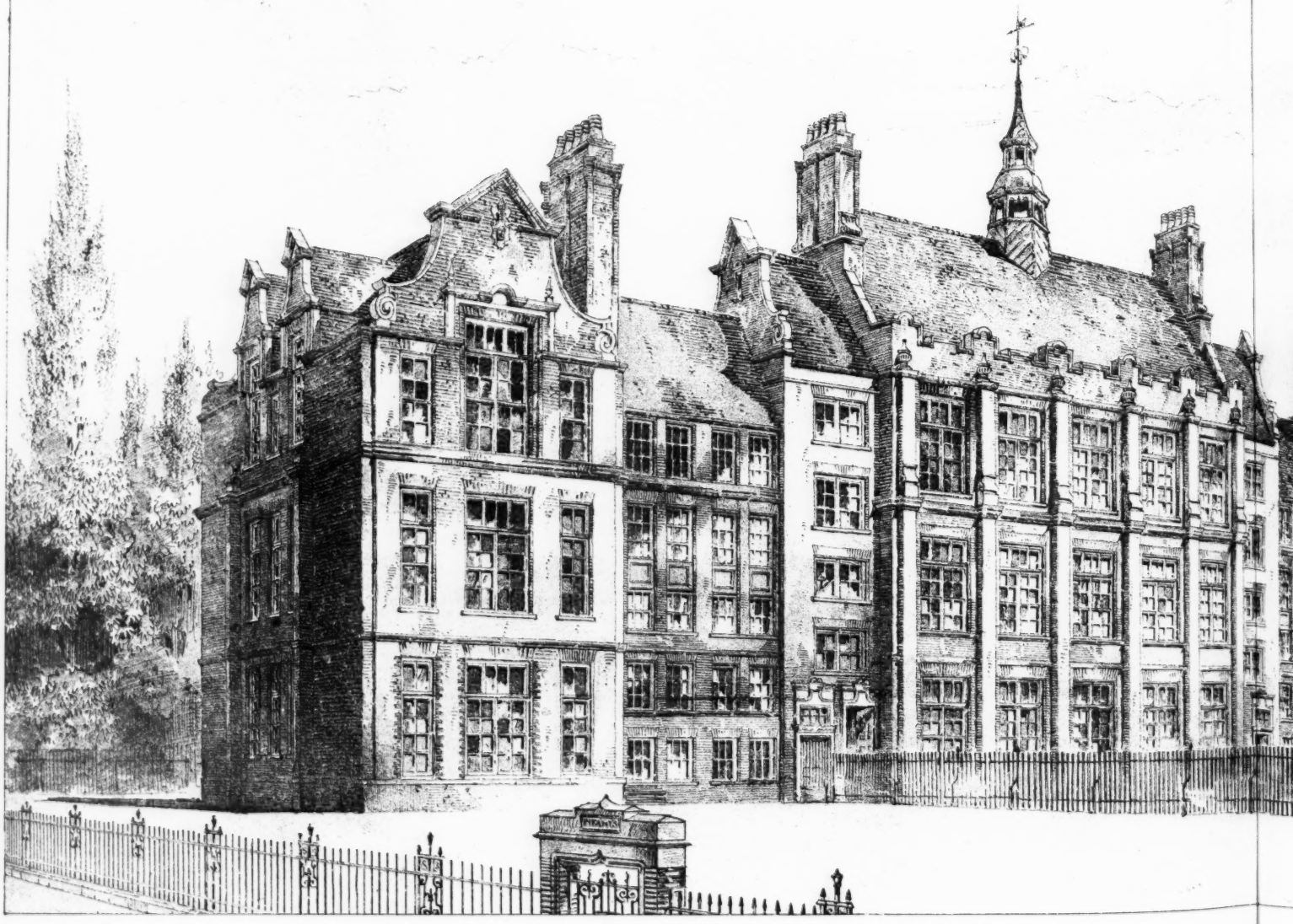

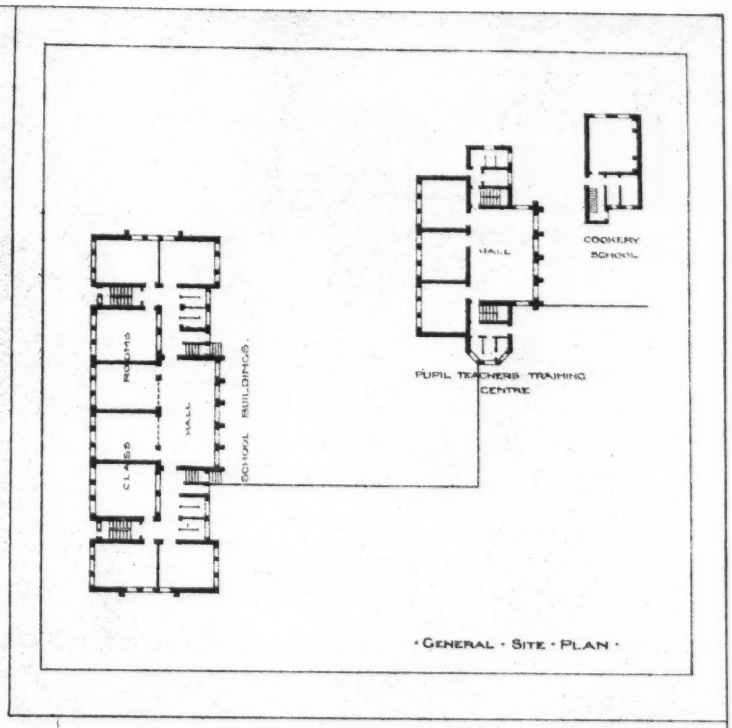

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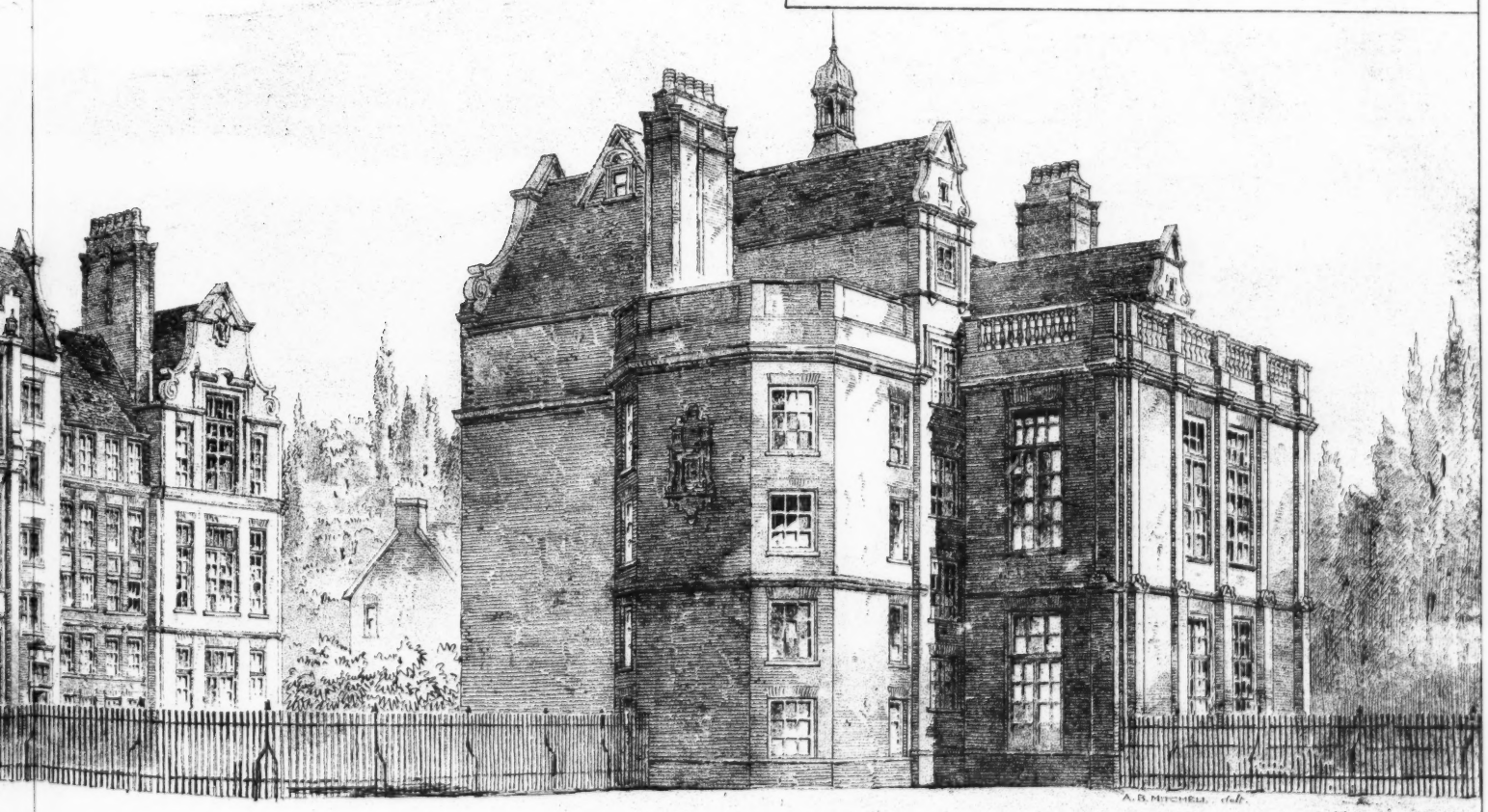

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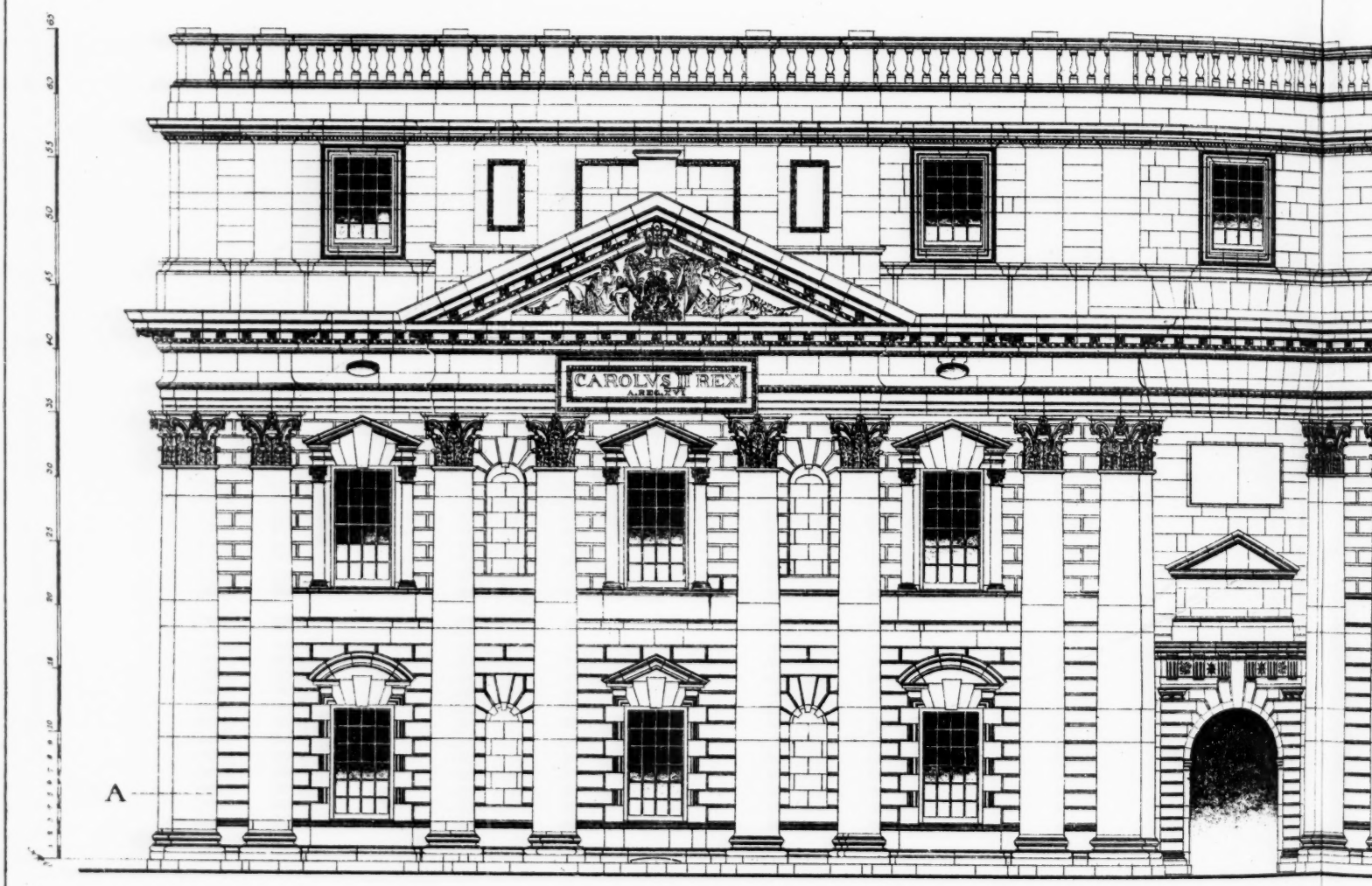
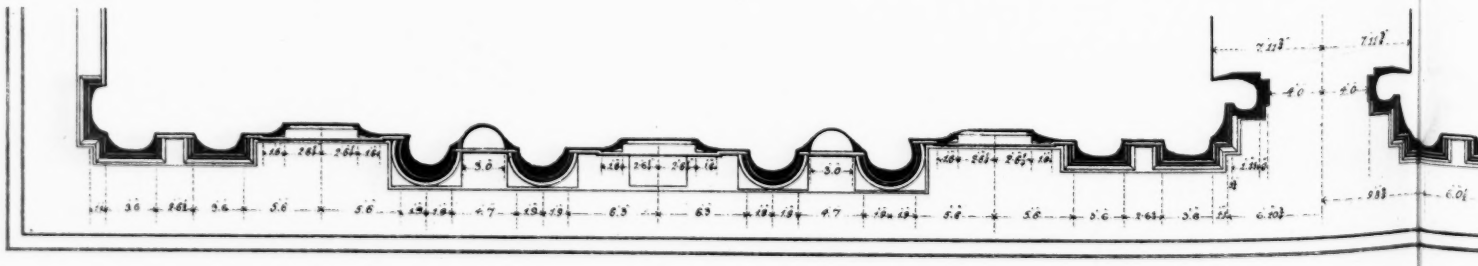


VERTICAL SCALE OF FEET

ELEVATION FACING THE RIVER.

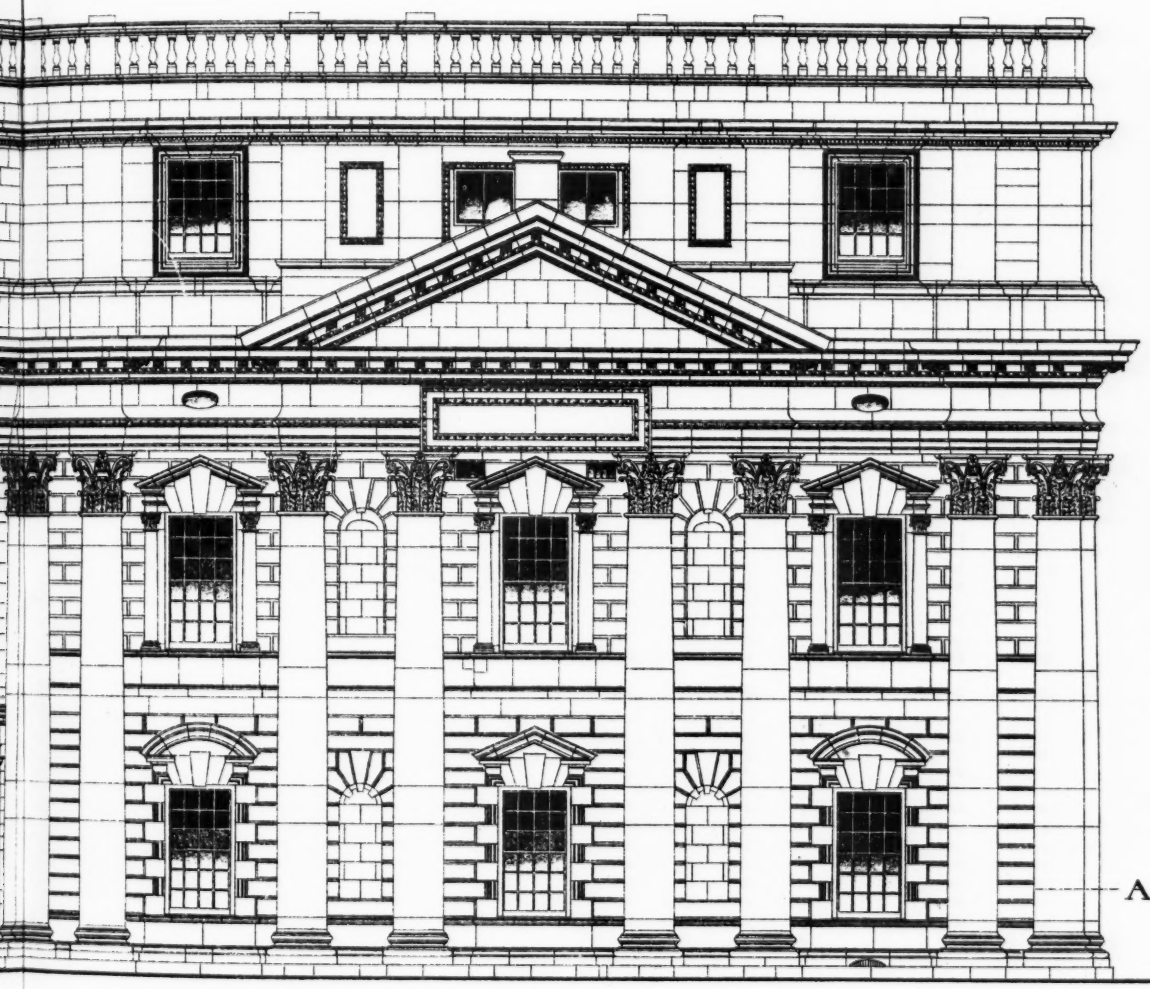


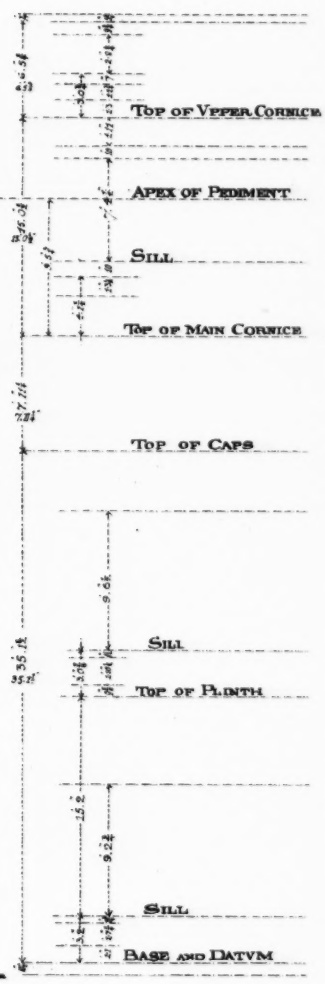
PLAN AT LEVEL A-A

SCALE OF FEET 6 — ONE INCH

Royal Academy Silver Medal Awarded, 1888.

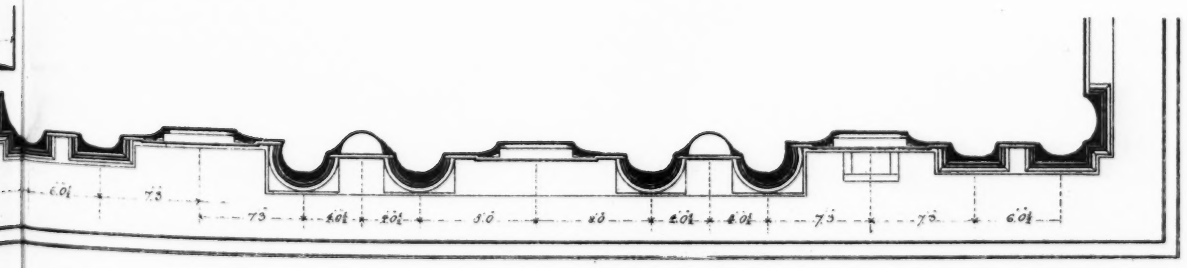
KING CHARLES' WING, GREENWICH HOSPITAL—MEAS





Skeleton Section
of
Different Heights

N
VER.



A A

PHOTO-LITHO. SPRAGUE & Co 22, MARTINS LANE, CANNON ST, LONDON, E.C.

AL—Measured and Drawn by Mr. C. S. Haywood.

SCALE · HALF INCH — ONE FOOT

EXCEPT ENLARGED DETAILS AND SECTIONS WHICH ARE ONE INCH — ONE FOOT

R. A. ARCHITECTVRAL SCHOOL

MEASVRED DRAWINGS FOR 1888

SECTION THRO ATTIC WINDOW, CORNICE AND PARAPET

INCH SCALE

ELEVATION OF CARVED ATTIC WINDOW AND OF VPPER CORNICE

CARVING ROVND WINDOW TO RT HAND BLOCK

ELEVATION OF MAIN PEDIMENT ATTIC AND PARAPET TO LEFT HAND BLOCK

(RT HAND BLOCK)

CARVING ROVND PANELS

INCH SCALE

(LEFT HAND BLOCK)

SECTION THRO' PEDIMENT AND ATTIC WINDOW

HALF ELEVATION OF ATTIC WINDOW

RIGHT HAND BLOCK INSCRIPTION PANEL

INCH SCALE

LEFT HAND BLOCK INSCRIPTION PANEL

CAROLVS II REX

A. REG. XVI

ELEVATION AND SECTION OF MAIN CORNICE

INCH SCALE

ELEVATION AND PLAN OF CAP TO FIRST FLOOR WINDOWS

ELEVATION OF GROUND AND FIRST FLOOR WINDOWS WITH INCH SCALE SECTION

INCH SCALE SECTION

CARVED CAP TO COLUMN AND PLAN OF CAP (LOOKING UP)

HALF ELEVATION OF GATEWAY BETWEEN TWO BLOCKS, AND ANGLE PILASTERS, WITH INCH SCALE SECTION AND DETAILS

INCH SCALE SECTION AND DETAILS

HALF ELEVATION AND PLAN OF BASE TO COLUMNS

SCALE OF FEET

HALF INCH – ONE FOOT
ONE INCH – ONE FOOT

PHOTO-LITHO. SPRAGUE & Co 22, MARTINS LANE, CANNON ST, LONDON, E.C.

KING CHARLES' WING, GREENWICH HOSPITAL.—MEASURED AND DRAWN BY MR. C. S. HAYWOOD.

DETAILS OF FRONT.

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